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THE
ALEXANDER-DEWEY
ARITHMETIC
ELEMENTARY
BOOK

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THE
ALEXANDER-DEWEY
ARITHMETIC

ELEMENTARY BOOK

BY

GEORGIA ALEXANDER

DISTRICT SUPERINTENDENT OF INDIANAPOLIS SCHOOLS

EDITED BY

JOHN DEWEY

PROFESSOR OF PHILOSOPHY IN COLUMBIA UNIVERSITY

The problem is always the same: to interest the pupil, to induce research, to give him the notion continually, the illusion, if you please, that he is discovering for himself that which is being taught him.—M. LAISANT.

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PREFACE

THIS series of arithmetics arises from the realization that the mathematics taught in the schools of a democracy must function in:

1. Clear and independent thinking as a preparation for business, science and industry.
2. Skill in mathematical computation.
3. Civic responsibility which will carry into action whatever is needed for the welfare of the community.

That these ends may be accomplished, new arithmetical ideas have been introduced by means of the socialized recitation, thus affording the pupil an impelling incentive, cultivation of initiative and judgment, and a desire to check results. The arithmetical ideas gained through this social introduction are made automatic through scientific practice which later culminates in their application to new concrete situations. Reviews are both constant and varied. Fully fifty per cent of the work is to be performed without pencil. The subject matter is of contemporary interest which brings into the otherwise isolated school-room the great world where mathematics are found in every basic activity. The desideratum is an intelligent, responsible, skillful pupil.

The respective contributions of the author and the editor of the series are perhaps sufficiently indicated by the use of these terms. The editor has not confined his attention to allowing the use of his name, but has made suggestions as to the underlying principles, has suggested experiments to be tested in school-room practice, has read and criticized the text and is jointly responsible for its present form. The specific problems and principles have been worked out in the school-room under the direct supervision of the author and tested till they were satisfactory. Grateful acknowledgment is made to the score of classroom teachers who have so generously and intelligently aided in testing the various lessons, and to Mrs. John Dewey, who has read the text critically and made valuable suggestions.

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ELEMENTARY ARITHMETIC

PART I—SECTION ONE

1

GOING TO THE GROCERY FOR MOTHER



Mr. Smith: Good morning, Mary.

Mary: Good morning, Mr. Smith. A cake of laundry soap, please (*gives a dime or two nickels*).

Mr. Smith: Here is the soap. Thank you, Mary. Good-by, Fred; don't lose your bread.

Continue playing "Grocery" with nickels and dimes (toy money) until every one has bought something.

2

Making Five

$$1 + 1 + 1 + 1 + 1 = 5$$

$$1 + 4 = 5$$

$$2 + 3 = 5$$

$$3 + 2 = 5$$

$$4 + 1 = 5$$

$$5 + 0 = 5$$

		5		
1		4		
2		3		
3		2		
4		1		
		5		

Separating Five

$$5 - 0 = 5$$

$$5 - 1 = 4$$

$$5 - 2 = 3$$

$$5 - 3 = 2$$

$$5 - 4 = 1$$

$$5 - 5 = 0$$

Make sure that pupils can make and separate in similar fashion all numbers to 10 inclusive. Discourage counting by ones.

3

AT THE FRUIT STAND

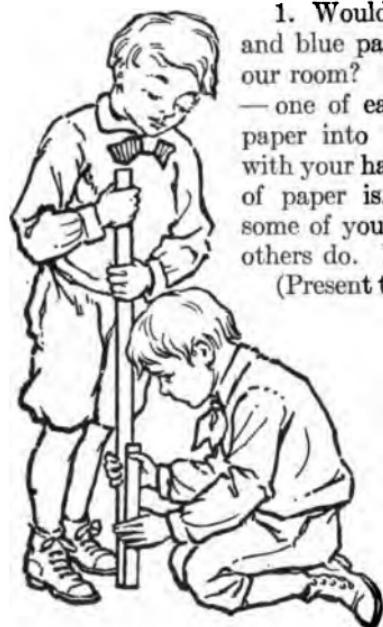
1. Each of the children had a dime to buy some fruit. Grace bought a peach for 3 cents and a plum for 2 cents. How much change did she receive?
2. Charles bought an orange for 5 cents and a banana for 4 cents. How much did he spend? Change?
3. Louise spent 4 cents for a pear and 2 cents for a plum. How much did she spend?

Teach form: 3 cts. for a peach 10 cts. at first
 + 2 cts. for a plum - 5 cts. spent
 5 cts. for both 5 cts. left
 Grace had 5 cents left.

4

WRITTEN PROBLEMS

1. I paid 8 cents for a spool of thread and a paper of needles. The thread cost 5 cents. How much did the needles cost?
2. There are 6 cows in a pasture. One cow has no horns. How many horns have the other cows?
3. After Alice had copied 2 words, she had 5 more to copy. How many words in her lesson?
4. Ned's mother wished him to go to grandmother's for her. It took him 5 minutes to change his shoes, and 3 minutes to put on his hat, overcoat and gloves. How long before he was ready?
5. Charles picked 9 quarts of cherries and sold 5 quarts. How many quarts had he left?
6. Susan skated 4 miles on Thursday and 3 miles on Friday. How many miles did she skate in the two days?
7. If two men are 8 miles apart and each walks 2 miles toward the other, how far apart are they then?
8. There are 4 white clouds in the sky and 5 gray ones. How many clouds in the sky?
9. If you buy a paper of pins for 2 cents, what change will you receive from a dime?
10. I see 3 yellow butterflies on a thistle and 3 more flying near. How many butterflies do I see?
11. I bought 2 oranges at 4 cents apiece. How much change did I receive from a dime?
12. Alice has 2 dolls and Anna has 4 dolls. How many dolls must Anna give Alice that they each may have the same number?
13. Tell us a story about 8 birds minus 7 birds.

FOR A NATIONAL HOLIDAY — *Dictation*

1. Would you like to make some red, white and blue paper chains with which to decorate our room? Here are three rolls of crêpe paper — one of each color. I wish first to cut the paper into pieces one yard long. Show me with your hands just how long you think a yard of paper is. You children do not agree — some of you think a yard is much longer than others do. How can we tell exactly?

(Present the yardstick and tell its name if no child can do so.)

2. Henry, you may measure and cut the red paper into pieces a yard long. Since we have but one yardstick, who can tell us another way to measure off a yard?

(Present the foot rule if no child responds.)

3. Frank, measure Henry's yardstick with your foot rule. A yard is how many times as long as a foot? Now measure off the white paper and cut it into pieces a yard long. Kate, you may cut the blue paper into pieces a yard long.

4. Now we shall measure and cut our paper into pieces a foot wide. How many pieces does each yard make? Who measured with his rule? Who folded his paper into three equal pieces?

5. Our strips are to be an inch wide. Show us how wide you think an inch-strip will be. How can we find out exactly? How many inch-strips does each foot-strip make?

Complete and learn:

- inches make 1 foot.
- feet make 1 yard.

6

THE HARE AND THE TORTOISE — I



Write the answers to the examples in the first exercise. Stand as soon as you have finished so that we may see how long it takes to do the work. Remember the hare could run the faster, but the tortoise won the race. Every time you put down a wrong answer your mind has gone to sleep.

$$\begin{array}{r}
 1. \quad \begin{array}{rrrrrrrr} 4 & 1 & 3 & 2 & 6 & 3 & 4 \\ +5 & +8 & +3 & +7 & +2 & +5 & +4 \\ \hline & & & & & & \end{array} \\
 2. \quad \begin{array}{rrrrrrrr} 8 & 4 & 6 & 3 & 5 & 4 & 8 \\ +2 & +3 & +1 & +7 & +3 & +2 & +1 \\ \hline & & & & & & \end{array} \\
 3. \quad \begin{array}{rrrrrrrr} 10 & 9 & 6 & 7 & 8 & 10 & 9 \\ -8 & -2 & -5 & -2 & -7 & -9 & -3 \\ \hline & & & & & & \end{array} \\
 4. \quad \begin{array}{rrrrrrrr} 3 & 10 & 3 & 9 & 4 & 8 & 7 \\ +4 & -2 & +6 & -4 & +6 & -5 & +3 \\ \hline & & & & & & \end{array} \\
 5. \quad \begin{array}{rrrrrrrr} 8 & 5 & 10 & 7 & 10 & 7 & 5 \\ -3 & +2 & -7 & +1 & -4 & +2 & -3 \\ \hline & & & & & & \end{array}
 \end{array}$$

Interest the children in cutting down their time records (either individual or class) by comparing the time required on Monday with that required on subsequent days for the same practice. Copy the exercise on the board, changing the order of the combinations from day to day. Keep covered until all are ready to start. It will be well for pupils who fail, to remember just which combinations are hard for them.

THE MILKMAN



Man (ringing the bell): Good morning, Mrs. Brown.

Mrs. Brown: Good morning. You may give me a pint this morning. (The milk costs 8 cents a pint. How much change does she receive from a dime?)

Man (again ringing as he goes down the street): Good morning, Mrs. Jones.

Mrs. Jones: I will take a quart this morning, please. (How much change does she receive from two dimes?)

Play buying milk just as your mother buys it. Have you ever visited a dairy? Perhaps your teacher will take you to one, or to a milk depot.

Continue exercises in liquid measure from day to day, using measures, water, toy money, tickets, etc. Do not confine the work to milk selling, but get from the children suggestions as to other liquids frequently purchased for the home. Introduce the gallon.

8

Name the numbers from 0 to 10, counting by 2's. These are called the *Even Numbers*.

Name the numbers from 1 to 9, counting by 2's. These are called the *Odd Numbers*.

Is the number of your school room odd or even?

How are the pages in this book numbered? Are all books numbered that way? Find this out for yourself.

Draw a line down a piece of paper like this, arranging the even numbers to 10 on the left side, and the odd numbers on the right:

Even	Odd
0	1
2	3

9

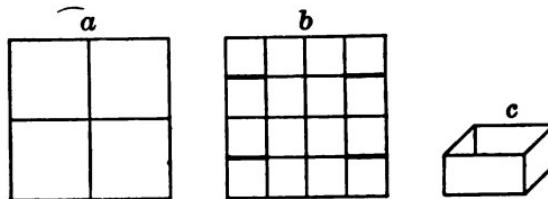
Add upward and downward:

1.	2.	3.	4.	5.	6.	7.	8.
7	2	4	0	4	1	7	2
0	4	5	6	0	5	1	2
2	3	1	2	4	4	2	5

Complete and learn:

- pints make 1 quart.
- quarts make 1 gallon.

10

MAKING A CANDY Box — *Dictation*

Take a piece of stiff paper 4 inches square. Fold as follows, keeping the same side up:

1. Fold the diameters — see picture *a*.
2. Fold each edge to the diameter parallel with it and cut along the heavy lines — see picture *b*.
3. Fold into the shape of a box and paste the corner squares inside — see picture *c*.
4. Cut two pieces of oiled tissue paper just large enough to cover the top and the bottom of the box. How long is each edge of the tissue paper?
5. If four pieces of fudge of equal size exactly cover the bottom, how long and how wide is each piece? How many square inches in the bottom of the box?
6. If the fudge is half an inch thick, how many layers will fill the box?
7. How many pieces of fudge will fill the box?

11

$$\begin{array}{ll} 1. 9 - 4 + 2 = & 6. 2 + 8 - 5 = \\ 2. 3 + 4 - 6 = & 7. 7 - 5 + 6 = \\ 3. 8 - 3 + 4 = & 8. 3 + 5 - 7 = \\ 4. 2 + 7 - 8 = & 9. 6 - 4 + 5 = \\ 5. 3 + 3 + 3 = & 10. 4 + 2 + 2 = \end{array}$$

12**FARMER BROWN**

1. Farmer Brown took 5 live turkeys and 4 dressed ones to market. How many turkeys did he take in all?
2. He sold all his turkeys but one. How many turkeys did he sell?
3. Of 10 pounds of butter he sold all but 3 pounds. How many pounds did he sell?
4. He sold 5 quarts of vinegar in pint bottles. How many bottles of vinegar did he sell?
5. He sold 7 dozen eggs and took 1 dozen home. How many dozen eggs did he take to market?
6. He sold 2 bushels of new potatoes and 6 bushels of old potatoes. How many bushels of potatoes did he sell?
7. He sold 3 bushels of cooking apples and 4 bushels of eating apples. How many bushels of apples did he sell?
8. Before Farmer Brown went home he bought 4 pounds of beef. The butcher cut the beef from a 10-pound piece. How many pounds were left in the piece?
9. He bought a pound of cheese for 40 cents and gave the grocer a fifty-cent piece. How much change did he receive from that purchase?
10. The grocer, after selling Farmer Brown a 5-pound sack of salt and a 15-pound sack of sugar, put them into one big bag. How much did the bag then weigh?
11. At the hardware store he bought 10 pounds of large nails and 5 pounds of small nails. How much did his nails weigh?

13

MOTHER'S KITCHEN — *Dramatize*

Would you like to buy two things at our hardware store for the kitchen? You may take a dollar with you and spend it all. Here are the prices:

10 cents: spoon, toaster, pie pan, quart cup

20 cents: pancake griddle, wash basin

30 cents: small pail

40 cents: butcher knife

50 cents: broiler

80 cents: cake pan

60 cents: stew pan

90 cents: coffee pot

70 cents: large pail

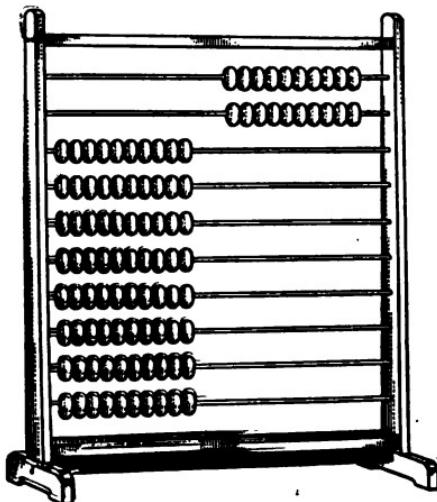
\$1.00: dish pan

Preceding the lesson the children should be taught to count to one dollar with dimes and to show upon paper the amounts of their purchases.

14

WHAT I CAN LEARN BY MYSELF

Each child should be provided with a hundred wooden splints. If possible the teacher should have a numeral frame showing 100.



Count out 10 sticks and put a rubber band around them. Make as many bundles of 10 each as you can from the sticks on your desk. Now lay them this way upon the table so that all can see:

ten	10	one ten	30
twenty	20	two tens	
thirty	30	three tens	
forty	40	four tens	
fifty	50	five tens	
sixty	60	six tens	
seventy	70	seven tens	
eighty	80	eight tens	
ninety	90	nine tens	
one hundred	100	ten tens	



thirty

DICTATION

Write answers:

1. Write four tens in figures and in words.
2. Write 90 in words. How many tens in 90?
3. A squirrel has 4 toes on one forefoot and 5 on one hind foot. How many more toes has he on one hind foot than on one forefoot?
4. John bounced his ball 7 times. Frank bounced his 3 times more than John. How many times did Frank bounce his ball?
5. Sarah has 4 brothers and 3 sisters. How many children in the family?

Teach pupils to exchange papers and to grade. Continue this type of work daily.

Complete and learn:

$$10 = \begin{cases} 1 + 9 \\ 2 + ? \\ 3 + ? \\ ? + 6 \\ 5 + ? \end{cases} \quad 100 = \begin{cases} 10 + 90 \\ 20 + 80 \\ 30 + ? \\ ? + 60 \\ ? + 50 \end{cases}$$

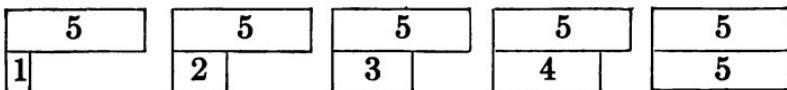
1. Find page 10 in your reader; page 20; page 50; page 70.
2. Which is nearer the front of the book, page 60 or page 70?
3. In your left hand take the first 50 pages of your book. In your right hand take pages 51 to 100. In which hand do you hold the most pages?
4. Find all the pages in your book which have 5 for the right-hand figure of the number of the page.

Continue.

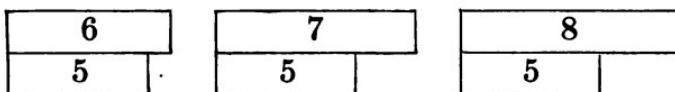
17

MORE AND LESS

What numbers are less than 5? With group counters.



What numbers are more than 5? Limit to ten.



Complete and learn:

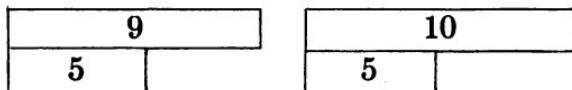
5 is more than _____. 5 is less than _____.

6 is more than _____. 6 is less than _____.

to

to

9 is more than _____. 9 is less than _____.

**18**

$$\begin{array}{r} 1. \\ 70 \\ + 30 \\ \hline \end{array}
 \begin{array}{r} 2. \\ 70 \\ - 30 \\ \hline \end{array}
 \begin{array}{r} 3. \\ 90 \\ - 40 \\ \hline \end{array}
 \begin{array}{r} 4. \\ 30 \\ + 10 \\ \hline \end{array}
 \begin{array}{r} 5. \\ 80 \\ - 30 \\ \hline \end{array}
 \begin{array}{r} 6. \\ 20 \\ + 70 \\ \hline \end{array}
 \begin{array}{r} 7. \\ 50 \\ - 20 \\ \hline \end{array}
 \begin{array}{r} 8. \\ 40 \\ + 30 \\ \hline \end{array}$$

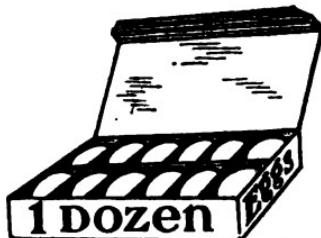
$$\begin{array}{r} 9. \\ 70 \\ - 50 \\ \hline \end{array}
 \begin{array}{r} 10. \\ 60 \\ + 10 \\ \hline \end{array}
 \begin{array}{r} 11. \\ 90 \\ - 30 \\ \hline \end{array}
 \begin{array}{r} 12. \\ 80 \\ - 40 \\ \hline \end{array}
 \begin{array}{r} 13. \\ 60 \\ + 20 \\ \hline \end{array}
 \begin{array}{r} 14. \\ 70 \\ - 40 \\ \hline \end{array}
 \begin{array}{r} 15. \\ 30 \\ + 70 \\ \hline \end{array}
 \begin{array}{r} 16. \\ 90 \\ + 10 \\ \hline \end{array}$$

19

AT THE CITY MARKET — *Dramatize*

Complete and learn:

— things make a dozen.



Now you may take the market basket and buy at the following prices:

Eggs: 35 cents

Rolls: 10 cents

Bananas: 15 cents

Cakes: 20 cents

Oranges: 30 cents

Lemons: 25 cents

Customers are not to spend more than 50 cents, in nickels and dimes. Cut objects from paper and color.

20

WRITTEN PROBLEMS

1. Mr. Wright had a flock of 90 sheep which he kept in two fields. In the first field were 30 sheep. How many sheep were in the second field?

2. Alice had 40 pieces of candy. She gave all but 10 of them to her schoolmates. How many pieces did she give away?

3. It is 80 miles to grandfather's farm. I can ride 70 miles of this distance on the train but must go the rest of the way by trolley. How many miles must I go by trolley?

4. I bought 2 pounds of Malaga grapes at 30 cents a pound. What did I pay for them?

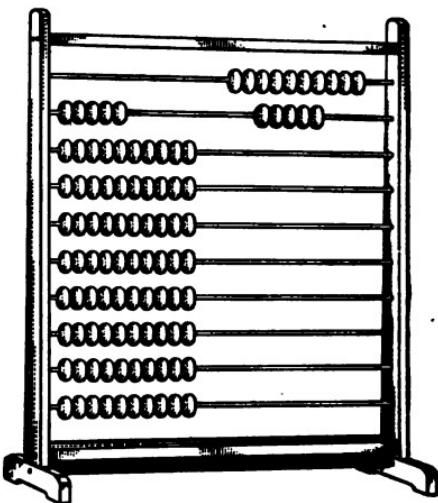
21

FROM TEN TO TWENTY

With counters.

- 10 + 1 = 11 eleven
- 10 + 2 = 12 twelve
- 10 + 3 = 13 thirteen
- 10 + 4 = 14 fourteen
- 10 + 5 = 15 fifteen
- 10 + 6 = 16 sixteen
- 10 + 7 = 17 seventeen
- 10 + 8 = 18 eighteen
- 10 + 9 = 19 nineteen
- 10 + 10 = 20 twenty

Encourage the children to find for themselves the rule for writing tens and ones. Give much practice in writing "1 ten and 5 ones"; "3 ones and 6 tens," etc. See Exercise 23, page 16. Teach spelling of names.



22

SOUR GRAPES — *Oral*

1. The grapes hung 8 feet high. The first time the fox leaped 5 feet. How many feet too short was his leap?
2. His first leap was 2 feet lower than his second leap. How high was his second leap?
3. When he jumped the third time he missed the grapes by 2 feet. How high was his third leap?
4. His fourth leap was 4 feet lower than the grapes. How high was the fourth leap?
5. The grapes were still 1 foot higher than his fifth leap, so he gave up and said "Sour grapes!" How high was his fifth leap?

23

WHAT I CAN LEARN BY MYSELF

Draw a 5-inch square upon your paper. Divide each side into 10 parts and connect the opposite points. How many little squares have you? How large is each square? Number your squares from 1 to 100, going across the top row first in this way:

1	2	3	4	5	6	7	8	9	10
11	12	13							20
21	22								
31									
91									100

- When you have finished, read the left row from top to bottom. What do you notice about all these numbers? What is true of all the numbers in the second row? In the third row? In the other rows?
- With your bundles of splints show 11. 

Change it to 21.  How did you do it?

3. Start with 13, and change it to 23, to 33, to 93.
How did you do it?
4. Start with 96 and make it 86; 46; 26; 6.
5. Begin with 1 and name all the numbers that end in 1 that are less than 100.
6. Begin with 7 and name all the numbers that end in 7 that are less than 100.
7. Begin with 94 and name all the numbers below that end in 4.
8. Write all the numbers from 81 to 91; from 63 to 79.
9. If 10 is one part of 19, what is the other part?
10. Harry has a dime. How much more must he have to buy a toy that costs 14 cents?
11. In one bin are 28 apples and in another 20 apples. How many more apples in the first bin than in the second?
12. Write in figures and words 9 tens and 8 ones; 8 tens and 9 ones. Which is the larger number?
13. John owns 25 marbles. This is 10 fewer than Harry owns. How many marbles does Harry own? How many marbles do both own?
14. Begin with 98 and count backward by ones to 78.
15. There are 10 maple trees on our block. This is 9 less than the number on the next block. How many maples on the next block?
16. Mr. Black paid \$96 for a horse and \$20 less for a cow. How much did he pay for the cow?
17. A street car had 27 passengers on its down-trip and 10 more passengers on its up-trip. How many passengers had it on its up-trip?

24

WHAT I CAN LEARN BY MYSELF

Complete and learn:

$$\begin{array}{r} 2 + 7 = \\ 12 + 7 = \\ \text{to} \\ 92 + 7 = \end{array} \quad \begin{array}{r} 3 + 5 = \\ 13 + 5 = \\ \text{to} \\ 93 + 5 = \end{array} \quad \begin{array}{r} 9 - 7 = \\ 19 - 7 = \\ \text{to} \\ 99 - 7 = \end{array}$$

Continue with all similar combinations until the class thoroughly grasps the principle.

25

DAILY FLASH PRACTICE

Add:

$$(a) \begin{array}{r} 23 \\ 5 \\ \hline \end{array} \quad \begin{array}{r} 54 \\ 3 \\ \hline \end{array} \quad \begin{array}{r} 35 \\ 4 \\ \hline \end{array} \quad \begin{array}{r} 81 \\ 7 \\ \hline \end{array} \quad \begin{array}{r} 26 \\ 3 \\ \hline \end{array} \quad \begin{array}{r} 28 \\ 1 \\ \hline \end{array} \quad \begin{array}{r} 92 \\ 7 \\ \hline \end{array} \quad \begin{array}{r} 50 \\ 3 \\ \hline \end{array}$$

Subtract:

$$(b) \begin{array}{r} 99 \\ 2 \\ \hline \end{array} \quad \begin{array}{r} 45 \\ 4 \\ \hline \end{array} \quad \begin{array}{r} 68 \\ 3 \\ \hline \end{array} \quad \begin{array}{r} 87 \\ 5 \\ \hline \end{array} \quad \begin{array}{r} 56 \\ 2 \\ \hline \end{array} \quad \begin{array}{r} 74 \\ 3 \\ \hline \end{array} \quad \begin{array}{r} 84 \\ 4 \\ \hline \end{array} \quad \begin{array}{r} 59 \\ 8 \\ \hline \end{array}$$

26

THE HARE AND THE TORTOISE — II

See Exercise 6, page 5

$$\begin{array}{r} 1. \quad 40 \quad 63 \quad 24 \quad 72 \quad 33 \quad 75 \quad 27 \\ + 8 \quad + 4 \quad + 5 \quad + 5 \quad + 6 \quad + 3 \quad + 2 \\ \hline \end{array} \quad \begin{array}{r} 2. \quad 36 \quad 24 \quad 47 \quad 22 \quad 53 \quad 30 \quad 94 \\ + 2 \quad + 5 \quad + 1 \quad + 6 \quad + 5 \quad + 7 \quad + 3 \\ \hline \end{array} \quad \begin{array}{r} 3. \quad 95 \quad 28 \quad 86 \quad 79 \quad 85 \quad 24 \quad 37 \\ - 5 \quad - 3 \quad - 4 \quad - 6 \quad - 4 \quad - 2 \quad - 4 \\ \hline \end{array}$$

SHOPPING — *Oral*

1. Mrs. Baldwin took her son, Louis, and her twin daughters to the shoe store. There she bought shoes for the twins. How many shoes did she buy in all?
2. Then she bought overshoes for herself and all of the children. How many overshoes did she buy?
3. After that they all went to a dry goods store where Mrs. Baldwin bought gloves for all of the children. How many gloves did she buy?
4. When Louis got home he climbed to the pigeons' nests to see if the eggs had hatched. He had 2 nests and there were 2 eggs in each nest. None had hatched. How many eggs did he see?
5. Mother sent one of the girls to the drug store to buy 5 two-cent stamps. How much money did she spend?
6. The other girl took a dime and went to the grocery for a cake of yeast that cost 2 cents. How much change did she bring home? What a busy day!

28

A HANDFUL OF PEANUTS

You may each have a handful of peanuts. Be sure to get the double kind. How many kernels in each shell? How many kernels in two shells? In four shells? In six shells? In twelve shells?



Let us arrange them in this way upon our desks to show the kernels in one, in two, in three and up to twelve shells:

Complete and learn:

1×2 kernels = 2 kernels

2×2 kernels = 4 kernels

3×2 kernels = 6 kernels

to

12×2 kernels = 24 kernels

29

WRITTEN PROBLEMS IN MULTIPLICATION

1. In my bedroom are 3 windows. At each window are 2 muslin curtains. How many curtains are there in all?

Teach form: 2 curtains

$$\begin{array}{r} \times 3 \\ \hline 6 \text{ curtains} \end{array}$$

There are 6 curtains in all.

2. Alice carried home two quarts of milk from the creamery. How many pints did she carry?

3. Mother gave Samuel 4 sandwiches for his lunch. How many pieces of bread were in the sandwiches?

4. There were 8 children at the party. They received 2 cakes each. How many cakes did all receive?

5. There are 12 doors on the lower floor of our house. How many door knobs are there?

6. In the children's ward of a hospital there are 10 beds. On each bed are 2 pillows. How many pillows are there in all?

7. What did Harry pay for 7 marbles at 2 cents each?



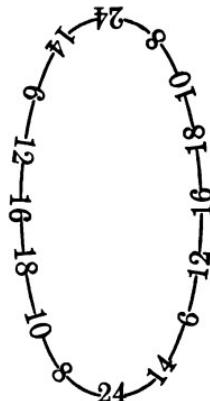
30

ACROSS THE CIRCLE

Print one of the more difficult products of the Table of Twos on each of 8 large cards. Duplicate the set.

Distribute these cards to the pupils of the class. Place the pupils upon the floor facing each other in a large circle (or ellipse) in such a manner that the same product appears at both ends of one diameter of the circle. The pupils holding duplicate products, play partners.

As you call " 2×7 " the children holding "14" exchange. A child standing in the middle of the circle tries to secure one of the places. If he is successful, then the child left out comes to the center. When " 2×8 " is called the couple holding "16" exchange. This is a most valuable game and can be used for the other three processes quite as well.



31

WHAT I CAN LEARN BY MYSELF

<i>Add</i> — ones first:	<i>Write</i>	<i>Think</i>
	54	$50 + 4$
	33	$30 + 3$
	<u>87</u>	<u>$80 + 7$</u>
1.	2.	3.
24	35	24
32	54	<u>63</u>
—	—	—
8.	9.	10.
57	22	44
32	76	<u>35</u>
—	—	—
11.	12.	13.
65	38	23
23	11	76
—	—	—
14.		
76		
23		

32

NOAH'S ARK



Play you are the animals that went into the ark. If there are 14 children in the class, how many pairs of animals will there be?

Teach both forms:

$$(a) \text{ 14 animals} \div \text{ 2 animals} = \text{ 7 times}$$

There were 7 pairs of animals that went into our ark.

$$(b) \begin{array}{r} 7 \text{ times} \\ 2 \text{ animals) } 14 \text{ animals} \end{array}$$

There were 7 pairs of animals that went into our ark.

Insist that the quotient be correctly placed over the units place in the dividend.

33

Complete and learn:

$$2 \div 2 = 1$$

$$8 \div 2 = 4$$

$$4 \div 2 = 2$$

to

$$6 \div 2 = 3$$

$$24 \div 2 = 12$$

34

WHAT I CAN LEARN BY MYSELF

<i>Subtract — ones first:</i>	<i>Write</i>	<i>Think</i>				
	47	$40 + 7$				
	25	$20 + 5$				
	<u>22</u>	<u>$20 + 2$</u>				
1. 96 <u>—</u>	2. 59 <u>—</u>	3. 88 <u>—</u>	4. 76 <u>—</u>	5. 65 <u>—</u>	6. 87 <u>—</u>	7. 58 <u>—</u>
45	32	53	31	41	62	21

35

WRITTEN PROBLEMS IN DIVISION

1. Oscar picked a box of cherries in 2 minutes. How many boxes could he pick at this rate in 18 minutes?
2. Jane has a dozen buttons sewed in pairs down the front of her dress. How many pairs of buttons are there?
3. Twenty-two pints of olives are how many quarts?
4. I spent 14 cents for — two-cent postage stamps.
5. Some boys made kites. Each kite required 2 sheets of paper. In all 10 sheets were used. How many kites were made?
6. A school room is 24 feet wide. How many steps 2 feet long will you take in crossing it?
7. Anna was given 20 cents with which to buy lemons for the picnic. She paid 2 cents for each. How many did she buy?
8. Sixteen slices of bread will make how many sandwiches?

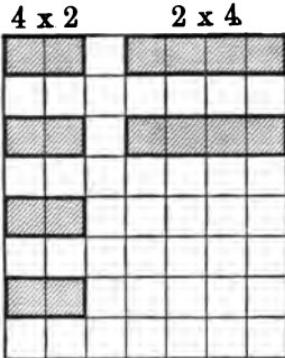
36**MULTIPLICATION — *continued***

Complete and learn — show with counters and squared paper.

$$\begin{array}{rcl} 3 \times 2 & = & 6 \\ 2 \times 3 & = & 6 \end{array}$$

$$\begin{array}{rcl} 4 \times 2 & = & 8 \\ 2 \times 4 & = & 8 \\ \text{to} \\ 12 \times 2 & = & 24 \\ 2 \times 12 & = & 24 \end{array}$$

2	2	2	2
4			

**37****WHAT I CAN LEARN BY MYSELF**

Multiply:

With counters.

2	20	4	40	6	60
2	2	2	2	2	2
—	—	—	—	—	—
3	30	5	50	7	70
2	2	2	2	2	2
—	—	—	—	—	—
8	80	9	90	10	100
2	2	2	2	2	2
—	—	—	—	—	—

38

Complete and learn:

$$\begin{array}{rcl} 3 \times 2 & = & 6 \\ 2 \times 3 & = & 6 \\ 6 \div 2 & = & 3 \\ 6 \div 3 & = & 2 \end{array}$$

$$\begin{array}{rcl} 12 \times 2 & = & 24 \\ \text{to} & & \\ 2 \times 12 & = & 24 \\ 24 \div 2 & = & 12 \\ 24 \div 12 & = & 2 \end{array}$$

39

WRITTEN PROBLEMS

1. My watch cost \$65 and my chain \$24. How much did they both cost?
2. On each side of a street car are 11 windows. How many windows on both sides?
3. Mr. Rockwood spent \$33 for an overcoat. This was \$14 less than his suit cost. How much did his suit cost?
4. One vacation Claude earned \$78 and spent \$53. How much did he save?
5. On Monday a horse travels 23 miles, on Tuesday 14 miles and on Wednesday 22 miles. How far does he travel in the 3 days?
6. Mr. Jameson bought 2 cows at \$80 each. How much did he pay for them?
7. Make a paper cover for some book that you own. Allow two inches for folding inside.
8. At 60 cents a quart how much will 2 quarts of cream cost? Solve in two ways.
9. The Christmas holidays were 2 weeks long. How many days long were they?
10. Elizabeth has read 54 pages of a book containing 98 pages. How many more pages does she have to read?
11. Name the even numbers between 40 and 60; the odd numbers.
12. The repairs on a motorcycle in 1918 were \$14, in 1919 were \$21 and in 1920 were \$32. How much were they during the three years?
13. I set out 65 tomato plants in my garden. All but 13 lived. How many lived?
14. What must I add to 46 to make 79?

40

GRACE'S BIRTHDAY DINNER — *Dramatize**Oral:*

1. Grace has a birthday party. Her cake has 8 candles on it. Half of them are white and half are pink. How many pink candles are there?



2. Grace has invited 3 girls and 4 boys to her party. How many children are at the table? What part of the children are boys?

3. All the girls and half of the boys are dressed in white. How many children are dressed in white?

4. Grace sits at the head of the table. She is eight years old to-day, and little Bob who sits beside her is just half her age. How old is he?

5. Frank is five years old and his age is just half of Louise's age. How old is Louise?

6. Each of us has a half-pint of ice-cream with our cake. How many pints do we all have?

7. If each child eats 2 pieces of cake, how many pieces do we all eat?

Now we each get candies, nuts and a paper cap. Later we shall have some games. Play the rest of the party with us and try to make some more problems with "one half" in them.

Teach all forms:

One half of 8 candles is written in three ways:

- (a) $\frac{1}{2}$ of 8 candles = 4 candles
- (b) 8 candles \div 2 = 4 candles
- (c) 4 candles
2) 8 candles

41

WHAT I CAN LEARN BY MYSELF

Add — ones first. Show with counters.

Write	Think
43	$40 + 3$
7	7
$\overline{50}$	$40 + 10$

1.	2.	3.	4.	5.	6.	7.	8.
27	32	54	98	35	46	73	21
3	8	6	2	5	4	7	9
$\underline{-}$							

42

ORAL PROBLEMS

1. How many marbles can you get for 4 cents if one marble costs 2 cents?
2. How much will 4 marbles cost if one marble costs 2 cents?
3. How many two-cent tops can you get for 18 cents?
4. James had 17 cents. This was 2 cents more than Harry had. How much had Harry?
5. Frank had 2 cents. This was 14 cents fewer than John had. How many had John?
6. How much must you pay for 6 ears of corn at 20 cents a dozen?
7. How many pieces of bread are required for a dozen sandwiches?

It is very important that the pupil from the first clearly distinguish the foregoing types of problems. Where the least confusion arises make the work dramatic, and continue the exercises until the habit of visualizing is formed. Drawing pictures to illustrate the problems is another great aid.

43

ONE HALF

1. With counters show:
 $\frac{1}{2}$ of 4; of 40; of 12; of
 20; etc.



2. William spent a half-dollar for a pair of gloves. How much change did he get from a dollar?

3. It takes $\frac{1}{2}$ hour to go by trolley from Anderson to the next town. In how many minutes could I make the round trip if the car returned to Anderson at once? There are 30 minutes in one half-hour.

4. There are 25 children attending an entertainment. This is $\frac{1}{2}$ of all the people. How many people are attending the entertainment?

5. There are 80 lamp posts on a certain street. How many lamp posts are on one side of the street? They are divided equally.

44

1. What number is $\frac{1}{2}$ of 8?
2. Eight is $\frac{1}{2}$ of what number?
3. What number is $\frac{1}{2}$ of 6?
4. Six is $\frac{1}{2}$ of what number?
5. What number is $\frac{1}{2}$ of 12?
6. Twelve is $\frac{1}{2}$ of what number?
7. What number is $\frac{1}{2}$ of 20?
8. Twenty is $\frac{1}{2}$ of what number?
9. What number is $\frac{1}{2}$ of 60?
10. Sixty is $\frac{1}{2}$ of what number?
11. What number is $\frac{1}{2}$ of 80?
12. Eighty is $\frac{1}{2}$ of what number?

$\frac{1}{2}$
$\frac{1}{2}$

Continue.

45**WHAT I CAN LEARN BY MYSELF*****Subtract: Write******Think***

	FIRST METHOD	SECOND METHOD
--	---------------------	----------------------

$$\begin{array}{r}
 50 \\
 6 \\
 \hline
 44
 \end{array}
 \quad
 \begin{array}{r}
 40 + 10 \\
 6 \\
 \hline
 40 + 4
 \end{array}
 \quad
 \begin{array}{r}
 50 + 10 \\
 10 + 6 \\
 \hline
 40 + 4
 \end{array}$$

The teacher will need to explain in the second method that adding 10 to both numbers does not change the relation. Teach one method only.

Do not permit the pupil to cross out figures in the minuend.

1.	2.	3.	4.	5.	6.	7.	8.	9.
40	90	30	60	20	50	70	20	90
8	4	1	7	2	9	6	8	9

46**DICTATION**

1. $2 \times 40 - 8 =$
2. $54 - 30 =$
3. Anna and Grace found 6 plums in their lunch basket. How many were there for each?
4. A cat has 4 toes on each front foot and 5 toes on each hind foot. How many toes has she in all?
5. The cook boiled a dozen eggs for six people. How many eggs was that for each?

47

1. $2 \times 9 - 5$
2. $17 - 5 + 8$
3. $2 \times 8 + 4$
4. $20 - 8 + 2$
5. $4 \times 5 + 2$
6. $19 - 5 + 6$
7. $20 - 6 - 2$
8. $16 \div 2 + 10$
9. $18 - 10 + 2$

48**WRITTEN PROBLEMS**

1. Sarah is making a quilt for her doll's bed. When finished it will have 5 rows of squares in it, and 10 squares in a row. How many squares will be in the whole quilt? Make drawing.
2. Sarah has finished all but 5 of the squares. How many squares has she finished?
3. Bob and Ned were coasting on their sled when the rope broke. A new rope cost them 14 cents. How much did each pay if they shared equally?
4. A farmer has 6 rows of cabbages in his garden, with 20 cabbages in a row. How many cabbages in the garden?
5. A confectioner made 86 pounds of caramels and sold 54 pounds. How many pounds had he left?
6. This confectioner also made creams the same day. The weight of the caramels was 4 pounds less than the weight of the creams. How much did the creams weigh?
7. A man is 48 years old. His wife is 8 years younger than he. What is the sum of their ages?
8. I have a square flower garden with 4 foliage plants on each side. If one plant is in each corner, how many plants have I in all? Make a drawing.
9. Mrs. Burton made 24 quarts of raspberry jam. She put it into pint jars. How many jars did she use?
10. She made 24 pints of apple butter and put it into quart jars. How many jars did she use for the apple butter?
11. Frank put 20 quarts of blackberries into pint boxes. How many boxes did he use?

49

WRITTEN PROBLEMS

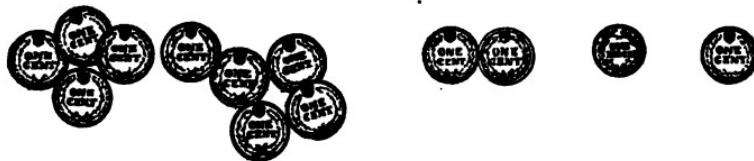
1. A grocer sold a pound of butter for 62 cents. His customer gave him 6 dimes and a nickel. How much change should the grocer give?
2. A milkman sold 20 bottles of milk on Monday. This was 6 less than the number he sold on Tuesday. How many bottles did he sell on Tuesday?
3. A woman who is 42 years old is 3 years younger than her husband. How old is he?
4. I received a book for Christmas which has 96 pages in it. I have read 50 pages of it. How many more pages have I to read?
5. The book Susie received also has 96 pages in it. She has read only 5 pages of her book. How many more pages has she to read?
6. Anna is 10 years old and Ralph is 15. How old will Ralph be when Anna is 13 years old?
7. When Ralph is 20 years old, what will Anna's age be?
8. Grace gave Jennie 24 plums and kept 20 for herself. How many had she at first?
9. If 100 yards of wire netting go once around a lot 20 yards wide, how long is the lot? Make a drawing.
10. Henry set out 39 tomato plants, of which all but 7 lived. How many tomato plants lived?
11. I bought a half-pound of butter for 30 cents, a quarter-pound of tea for 25 cents, and 30 cents' worth of sugar. How much did I pay for all?
12. A farmer had 48 sheep. He sold 3 of them, then 2, then 2. How many sheep had he left?
13. He had 70 chickens. He bought 27 more and then sold 50. How many chickens had he then?

50

AT THE GROCERY — *Dramatize*

1. Mother sent Henry to the grocery for a half-pound of crackers which cost 9 cents and a candle which cost 2 cents. She gave him a dime and how many pennies to pay for the crackers and the candle?

$$9\text{¢} \quad + \quad 2\text{¢} \quad = \quad 10\text{¢} + 1\text{¢}$$



2. The grocer sold Elsie an orange for 5 cents and two apples for 6 cents. She gave him two pieces of money, one of which was a dime. What was the other piece? Make a picture for this problem like the one above.

3. Kate bought a pound of meal for 4 cents and a pint of beans for 7 cents. How much did she pay for them? One piece of money was a penny, what was the other?

4. Mother gave Grace a dime and a penny to buy a pint of milk, telling her that she might spend the remainder of the money for candy. The milk cost 8 cents. How much did Grace spend for candy?

5. Bessie had a dime and a penny in her purse. She bought a cake of yeast for 3 cents. How much has she left?

51

1.	2.	3.	4.
$2 + 80$	$2 + 60$	$2 + 100$	$2 + 40$
2×80	2×60	2×100	2×40
$80 - 2$	$60 - 2$	$100 - 2$	$40 - 2$
$80 \div 2$	$60 \div 2$	$100 \div 2$	$40 \div 2$

52

WHAT I CAN LEARN BY MYSELF

Complete and learn — with counters or squared paper:

$$9 + 2 = 10 + 1$$

The diagram shows two sets of base ten blocks. The first set has 9 vertical rods (ones) and 2 additional vertical rods, totaling 11. The second set has 10 vertical rods (ones) and 1 additional vertical rod, totaling 11.

Write

$$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array}$$

Think

$$\begin{array}{r} 9 \\ 1 + 1 \\ \hline 10 + 1 \end{array}$$

10	1
9	1
8	2
7	3
6	4

$$\begin{array}{r} 8 \\ + 3 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 8 \\ 2 + 1 \\ \hline 10 + 1 \end{array}$$

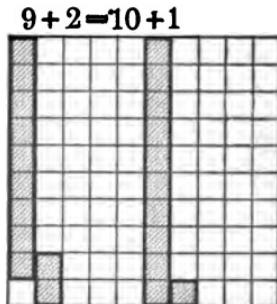
$$\begin{array}{r} 7 \\ + 4 \\ \hline 11 \end{array}$$

to

$$\begin{array}{r} 3 + 1 \\ \hline 10 + 1 \end{array}$$

$$\begin{array}{r} 2 \\ + 9 \\ \hline 11 \end{array}$$

$$\begin{array}{r} 2 \\ 8 + 1 \\ \hline 10 + 1 \end{array}$$



53**ORAL PROBLEMS**

1. In one field are 7 horses and in another field are 4 horses. How many horses in both fields?
2. How many days in 2 weeks and 5 days?
3. I have 11 cents. How many 2-cent postage stamps can I buy?
4. My dog Rover is 6 years old. He is 5 years younger than Harry's dog. How old is Harry's dog?
5. In one garden are 50 pansies. In a second are $\frac{1}{2}$ as many pansies. How many pansies are in the second garden?
6. Mr. Clark owns 40 cows. This is $\frac{1}{2}$ as many as my uncle owns. How many cows does my uncle own?
7. Write 47 in words. Write 9 tens and 4 ones in words.
8. Mother sewed a dozen buttons on Mary's aprons, sewing 2 buttons on each. How many aprons had Mary?
9. In a school of 87 pupils, 30 are girls. How many boys are there?

54**DAILY FLASH PRACTICE**

Supply the missing number:

2 8 3 6 4 5 9 7

11 11 11 11 11 11 11 11

The child who cannot instantly give the result should be required to solve orally as in Exercise 52, page 34, until the making to 10 becomes automatic. Return to the counters if necessary, but do not permit counting by ones. Do not hurry.

36 ADDITION IN TWO COLUMNS—"CARRYING"

55

WHAT I CAN LEARN BY MYSELF

Add — ones first:

.	10
---	----

4

Write Think

10

6

$$\begin{array}{r} 14 \\ + 10 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ + 10 \\ \hline \end{array}$$

$$\begin{array}{r} 30 \\ + 20 \\ \hline \end{array}$$

10

10

4	6
---	---

1.

2.

3.

4.

5.

6.

7.

8.

59

21

73

17

28

32

46

24

25

55

81

19

67

23

84

16

56

WRITTEN PROBLEMS

1. Mr. Jackson traveled 63 miles in his automobile in the morning and 32 miles in the afternoon. How many miles did he travel during the day? How many more miles did he travel in the morning than in the afternoon?
2. Bob had \$50 in the bank. How much has he left after spending \$7 for a canoe?
3. On the library shelf are 26 large books and 13 small ones. How many are there in all?
4. There are 97 people on the steamboat "Sunshine." Thirty-five of these are on the upper deck. How many people are in other parts of the boat?
5. The indicator in the front of the trolley car shows that 85 people have paid car fare on this trip. There are now 43 people on the car. How many have left the car?

6. If 14 more passengers get into this car during the trip, how many fares should the conductor ring up for the entire trip?
7. There are 80 electric globes on the posts on the north side of Monument Square, and as many on the south side. How many globes on both sides? Solve in two ways.
8. How many tiles 1 foot square are needed for a hearth 4 feet long and 2 feet wide? Make a drawing.
9. I wish to put a fence across one end of my garden which is 12 yards wide. How many posts shall I need if I put the posts 2 yards apart with one at each end? Make drawing.
10. A milkman started out with 20 quart bottles of milk and 40 pint bottles. He sold all but 6 pints. How many quarts did he sell in all?
11. A jeweler sold a ring for \$48 and a pin for \$12. How much did he receive for both?
12. In a certain school are 36 girls. This is 24 fewer than the number of boys. How many boys are in the school?
13. Julia learned to spell 54 words last week and 46 words this week. How many words has she learned in the two weeks?
14. A shopkeeper bought two pieces of muslin. One piece contained 48 yards. This was 26 yards more than was in the second piece. How many yards were in the second piece?
15. Roy travels 70 miles a week on his wheel in delivering his papers. How many miles does he travel on an average each day if he delivers on Sunday?
16. I have \$46 after spending \$34 for a suit of clothes. How much money had I at first?
17. Make a problem using \times . Solve.

57

WHAT I CAN LEARN BY MYSELF

Complete and learn:

Write	Think	Write	Think
$\begin{array}{r} 11 \\ - 9 \\ \hline 2 \end{array}$	$10 + 1$	$\begin{array}{r} 11 \\ - 2 \\ \hline 9 \end{array}$	$10 + 1$
	9		2
	$1 + 1$		$8 + 1$
$\begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array}$	$10 + 1$		
	8		
	$2 + 1$		

58

- | | |
|------------------|--------------------|
| 1. $2 + 9 + 3 =$ | 6. $17 - 3 + 6 =$ |
| 2. $4 + 7 - 5 =$ | 7. $12 + 8 - 9 =$ |
| 3. $5 + 6 - 2 =$ | 8. $15 + 4 - 6 =$ |
| 4. $8 + 3 - 4 =$ | 9. $93 - 20 + 7 =$ |
| 5. $4 + 7 - 8 =$ | 10. $78 - 8 - 2 =$ |

59

UNITED STATES MONEY

Each child may bring to school a penny, a nickel, a dime or any other piece of money. From your parents or your teacher learn:

1. Of what metal it is made. Where. When.
2. Whose face do you see on the penny? What is the meaning of the V on the nickel?

Make up some problem that would fit your piece of money.

60

WHAT I CAN LEARN BY MYSELF

Add — ones first:

<i>Write</i>	<i>Think</i>					
32	30	+	2	1.	2.	3.
17	10	+	7	42	17	11
21	20	+	1	5	81	58
<u>70</u>	<u>60</u>	<u>+</u>	<u>10</u>	<u>13</u>	<u>2</u>	<u>31</u>
5.	6.	7.	8.	9.	10.	11.
26	7	3	65	54	26	25
12	41	34	12	12	1	73
<u>52</u>	<u>32</u>	<u>13</u>	<u>3</u>	<u>4</u>	<u>73</u>	<u>2</u>
						<u>31</u>

61

WRITTEN PROBLEMS

- Grace had a post card album. She had 32 cards from England, 13 from Belgium, and 25 from France. How many post cards had she?
- At 10 cents each how much will 8 grapefruit cost?
- A vineyard contains 7 rows of vines. If there are 20 vines in each row, how many vines are there in all?
- When milk is 15 cents a quart and cream 60 cents a quart, how many quarts of milk are worth 1 quart of cream? Use addition.
- A boy sells 80 newspapers that cost him a cent each for \$1.60. How much does he make?
- A carpenter cut 3 feet from a board 11 feet long. How many feet remained?

7. Henry paid a half-dollar for a knife and a quarter for a book. How much change did he receive from eight dimes? Use dollar sign in solving.

8. In the chicken yard were 15 yellow, 4 white, and 21 black chickens. How many chickens were there in all?

9. Make a book by doubling 8 pieces of paper. How many leaves in your book? How many pages?

10. How many feet of plate rail will be needed for a dining room 12 feet wide and 14 feet long? Take out 10 feet for openings. Drawing.

11. Mr. Jameson had 18 foreign stamps. He divided them equally between two boys. How many stamps did each boy get?

12. A rug is 12 feet long and 6 feet wide. How much will it cost to clean it at 1 cent a square foot? Drawing.

13. An army marched 23 miles a day for 2 days. How many miles did it march?

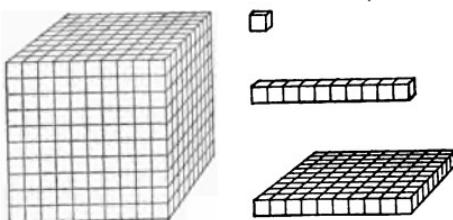
14. Each of 9 girls wove a rug 6 inches wide and 12 inches long. They sewed their rugs together into one large one. How long and how wide was it? Drawing.

15. Mrs. Anderson sent a box containing 24 apples to the Orphans' Home. When each child had received 2 apples the box was empty. How many children received apples?

16. My dresser top is 3 feet long and 2 feet wide. How large a piece of linen will I need for a scarf if the scarf is just as wide as the dresser top and 2 inches longer at each end?

17. Alice bought 2 pounds of grapes at 8 cents a pound and 4 cents' worth of cake. How much change did she receive from a quarter?

18. A druggist had 56 stamps and sold 23 of them. How many stamps had he left?

62**WHAT I CAN LEARN BY MYSELF***Complete:*

1	10	100	$10 = 10$ ones (or units)
2	20	200	
3	30	300	$100 = 10$ ——
to	to	to	
10	100	1000	$1000 = 10$ ——

63*Write in figures and read:*

1. Four hundred seven; three hundred sixteen.
2. Seven hundred four; six hundred thirty.
3. Four hundred seventeen; six hundred three.
4. Four hundred seventy; six hundred thirteen.

Reserve the use of "and" for decimals — do not permit the child to read 512 as "Five hundred and twelve."

Accustom the pupils also to reading 512 as "5 hundreds, 1 ten, 2 ones (or units)."

64*Add:*

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
57	48	14	67	36	73	41	83	43	59
<u>43</u>	<u>51</u>	<u>84</u>	<u>33</u>	<u>62</u>	<u>27</u>	<u>42</u>	<u>17</u>	<u>36</u>	<u>41</u>

65

WHAT I CAN LEARN BY MYSELF

	<i>Say</i>	<i>Think</i>		<i>Say</i>	<i>Think</i>
1.	7	7	2.	8	8
	+ 9	$3 + 6$		+ 7	$2 + 5$
	<u>16</u>	<u>$10 + 6$</u>		<u>15</u>	<u>$10 + 5$</u>
3.	6	4. 9	5. 4	6. 5	7. 4
	<u>9</u>	<u>8</u>	<u>9</u>	<u>7</u>	<u>8</u>
9.	8	10. 6	11. 8	12. 9	13. 5
	<u>6</u>	<u>7</u>	<u>9</u>	<u>6</u>	<u>8</u>
15.	8	16. 5	17. 7	18. 6	19. 9
	<u>6</u>	<u>9</u>	<u>8</u>	<u>8</u>	<u>7</u>

This method for finding the combinations is equally applicable to all numbers whose sum is more than 10. It will eliminate the vicious practice of counting by ones which is the greatest source of error in addition. As soon as the pupil has mastered the method he should be held responsible for automatic results. Practice daily.

66

ORAL PROBLEMS

1. If you have 11 walnuts and eat the kernels of 8 of them, how many nuts have you left?
2. Make 11 cents with 3 pieces of money.
3. Of 30 trees in a nursery all but 6 were evergreens. How many evergreen trees were there?
4. I bought 11 yards of lace. I put 3 yards on each of two dresses. How many yards had I left?
5. There are 6 drawers in my clothes chest. On each drawer are 2 knobs. How many knobs on all the drawers?
6. Eight rocking chairs have how many rockers?

7. How many 3-cent pencils can you buy if you have 11 cents?

8. If one box holds two cakes of soap, how many similar boxes will be needed for 2 dozen cakes?

9. A farmer has 62 acres in corn and 16 acres in pasture. How many acres has he in all?

10. A grocer sells 16 pint bottles of vinegar to 8 customers. If all bought in equal quantity, how much did each buy?

11. When ice-cream is selling at \$1.20 a gallon, how much is that for half a gallon?

12. A girl's skirt is a yard wide. At \$.20 a yard how much will be the cost of embroidery for a ruffle, if $\frac{1}{2}$ yard is allowed for fullness?

13. Charles planted 12 beans, all of which sprouted showing 2 tiny leaves on each plant.
How many little leaves came up?

14. He also planted 16 grains of corn but only half of them sprouted. How many little blades of corn came up?

15. Edwin gave 4 rabbits to Charles and had 7 left. How many rabbits did Edwin have at first?

16. Charles already had 16 rabbits. After Edwin gave him the 4 rabbits, how many did he have?

17. Edwin gave his 7 rabbits 14 carrots each day. How many carrots did each rabbit get?



67

$$1. \quad 3 + 8 - 9 =$$

$$6. \quad 5 + 6 - 8 =$$

$$2. \quad 11 - 4 - 2 =$$

$$7. \quad 5 \times 5 + 4 =$$

$$3. \quad 11 - 6 + 20 =$$

$$8. \quad 20 - 2 - 18 =$$

$$4. \quad 20 - 2 - 12 =$$

$$9. \quad 11 - 2 + 20 =$$

$$5. \quad 11 - 7 + 20 =$$

$$10. \quad 11 - 8 + 20 =$$

68

WHAT I CAN LEARN BY MYSELF

Multiply — units first:

Write	Think					
23	$20 + 3$	1.	2.	3.	4.	
2	2	34	11	64	32	
46	$\underline{40 + 6}$	<u>2</u>	<u>5</u>	<u>2</u>	<u>3</u>	
5.	6.	7.	8.	9.	10.	11.
72	21	53	11	84	21	13
2	9	2	7	2	6	3
	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	

69

WRITTEN PROBLEMS

1. Thomas planted 120 tulip bulbs in 6 rows. How many bulbs were in each row?
2. Each of us 3 children has \$32. How much have we together?
3. I wish to line a card case which is $2\frac{1}{2}$ inches wide and $5\frac{1}{2}$ inches long with silk. How many square inches shall I need? Allow $\frac{1}{2}$ inch on the length and on the width for turning in. Drawing.
4. If I put a silk cord around the edge of the card case, how much must I buy? Allow 2 inches for waste.
5. A grocer put 42 quarts of vinegar into pint bottles. How many bottles did he use?
6. He sold 42 pints of his vinegar. How many quarts had he left?
7. Make an original problem about $\frac{1}{2}$ of 86 trees.
8. Make an original problem about $86 \div 2$ trees.

9. Some boys who built a snow fort divided 80 snowballs equally between the two sides. How many snowballs did each side get?

10. In 5 minutes the boys on one side had thrown all their balls except 21. Those on the other side had 17 snowballs left. How many more balls had the first side left than the second?

11. A grocer bought 2 watermelons at 90 cents each and sold them at \$1.00 each. How much did he make?

70

WHAT I CAN LEARN BY MYSELF

Subtract — units first:

<i>Write</i>	<i>Think</i>	
FIRST METHOD	or	SECOND METHOD
$\begin{array}{r} 60 \\ - 24 \\ \hline 36 \end{array}$	$50 + 10$	$60 + 10$
$\begin{array}{r} 20 \\ + 4 \\ \hline 24 \end{array}$	$30 + 4$	$30 + 4$
$\begin{array}{r} 30 \\ + 6 \\ \hline 36 \end{array}$		$30 + 6$

The second solution will call for demonstration on the part of the teacher. See Exercise 45, page 30. Only one method should be taught.

1.	2.	3.	4.	5.	6.	7.	8.
$\underline{90}$	$\underline{30}$	$\underline{60}$	$\underline{20}$	$\underline{50}$	$\underline{80}$	$\underline{70}$	$\underline{60}$
$\underline{\underline{14}}$	$\underline{\underline{12}}$	$\underline{\underline{27}}$	$\underline{\underline{11}}$	$\underline{\underline{33}}$	$\underline{\underline{28}}$	$\underline{\underline{19}}$	$\underline{\underline{16}}$

71

DAILY FLASH PRACTICE

Subtract:

11	11	11	11	11	11	11	11
$\underline{3}$	$\underline{6}$	$\underline{8}$	$\underline{2}$	$\underline{7}$	$\underline{9}$	$\underline{5}$	$\underline{4}$

72

DICTATION

1. Write in figures seven hundred forty; seven hundred four.
2. Write in words 407; 470.
3. I have 4 dimes in my bank. This is $\frac{1}{2}$ of my money. How much have I?
4. How many horses can be shod all around with 11 shoes?
5. On one strawberry plant are 3 ripe berries and 8 green ones. How many berries on the plant?

73

Subtract:

1.	2.	3.	4.	5.	6.	7.	8.
284	965	781	647	869	427	807	947
<u>132</u>	<u>423</u>	<u>541</u>	<u>542</u>	<u>514</u>	<u>424</u>	<u>605</u>	<u>315</u>

74

WRITTEN PROBLEMS

1. Mr. Anderson has 36 acres of his farm planted in corn. The remainder of his farm, which is 24 acres, is pasture. How many acres in his entire farm?
2. In a certain school are 148 boys and 221 girls. How many pupils in the entire school?
3. How many more girls than boys in this school?
4. A fruit dealer who had 80 boxes of oranges sold all but 16 boxes. How many boxes did he sell?
5. A stock dealer bought 240 sheep. On Monday he sold 112, on Tuesday 108, and the rest on Wednesday. How many sheep did he sell on Wednesday?

6. In the circus parade were 62 horses, 32 ponies and 300 animals of other kinds. How many animals were there in all?

7. In a dry goods store the sales during a day were as follows: at the muslin counter, \$13; at the silk counter, \$60; at the notions counter, \$52. How much was the entire amount of the sales at the three counters?

8. In a storage barn are 163 bushels of wheat. These remain after 326 bushels have been taken out. How many bushels were in the barn at first?

9. I spent at the grocer's to-day: 33 cents for coffee, 24 cents for sugar and 32 cents for meat. How much did I spend?

10. A farmer had 36 bushels of wheat and 24 bushels of rye. How many bushels of grain had he in all?

11. On one train were 40 freight cars. This was 13 cars more than the number on another train. How many cars on the second train?

12. Make an original problem about 75 horses and 90 horses.

13. When a boy's expenses are \$14 a week, how much are they for 3 days?

14. I had \$9.08 in my purse and spent \$7.05. How much had I left?

75

A GAME FOR RECESS

Arrange a circle as for Blind Man's Buff with the Blind Man in the center. Each of the children in the circle should take a number under 11 and when he is caught by the Blind Man should call his number. If the Blind Man can instantly name the difference between the number given and 11, the child caught becomes the Blind Man.

76

WHAT I CAN LEARN BY MYSELF

Add — with counters if necessary:

Write	Think
19	10 + 9
2	2
<hr/> 21	<hr/> 10 + 11

9	19	29	39	49	59	69	79	89	99
2	2	2	2	2	2	2	2	2	2
<hr/>									
8	18		to	98					
3	3			3					

Continue with all the other combinations making a number ending in 1, or until the class thoroughly understands the principle.

77

AT THE DRY GOODS STORE

How much did each of these women spend?

1. Mrs. Kramer spent 17 cents for muslin and 4 cents for thread.
2. Mrs. Jackson spent 48 cents for a towel and 13 cents for a wash cloth.
3. Mrs. Wood spent 29 cents for ribbon and 2 cents for needles.
4. Mrs. Henry spent 65 cents for muslin and 26 cents for calico.
5. Mrs. Jameson spent 72 cents for an apron and 19 cents for a dusting cap.

In what figure does each of these answers end?

Continue.

78

EASTER MORNING — *Oral*

1. How bright the sun shines! Eleven of us are at the table. Six are children. How many are grown people?
2. The Easter bunny has 4 candy eggs in front of him and 17 more around him. How many candy eggs are there altogether?
3. Two pots of yellow daffodils are blooming in the window. On the first plant are 3 blossoms and on the second are 21 blossoms. How many more blossoms on the second plant than on the first?
4. In the dish in front of father are 2 dozen eggs. Half of them are colored for 6 children. How many eggs will each child get?
5. Each of the children ate 2 biscuits with butter and honey on them. How many biscuits did they eat in all?
6. After breakfast Paul and I carried a dozen colored eggs to old Aunt Sally. We carried them in two little baskets with the same number of eggs in each basket. How many eggs did we each carry?
7. Aunt Sally filled our baskets with doughnuts. She put 5 ring doughnuts into Paul's basket and a half-dozen twisted ones into mine. How many doughnuts did she give us?

79

DAILY FLASH PRACTICE

Add:

7	5	9	4	7	6	8	7	8
6	8	7	8	5	9	6	9	8
—	—	—	—	—	—	—	—	—
5	6	9	4	8	7	5	9	6
9	7	8	9	9	8	7	6	8
—	—	—	—	—	—	—	—	—

MULTIPLYING HUNDREDS

80

WHAT I CAN LEARN BY MYSELF

<i>Write</i>	<i>Think</i>	<i>Write</i>	<i>Think</i>
1. 234	$200 + 30 + 4$	2. 302	$300 + 0 + 2$
$\times 2$	$\times 2$	$\times 3$	$\times 3$
<u>468</u>	<u>$400 + 60 + 8$</u>	<u>906</u>	<u>$900 + 0 + 6$</u>
3. 423	4. 201	5. 320	6. 102
$\times 2$	$\times 5$	$\times 3$	$\times 4$

Continue.

81

DICTATION

1. Write in words 39 and 93.
2. $\frac{1}{2}$ of 18 + 2 - 5 =
3. At supper 17 tea biscuits were eaten and 4 left.
How many biscuits were there at first?
4. Of the 11 cups of cocoa which mother made all but 2 were drunk. How many cups of cocoa were drunk?
5. Three of the 11 slices of cold chicken were left.
How many slices were eaten?

82

DAILY FLASH PRACTICE

Add:

(a)	7	8	5	9	4	3	6	2	5
	<u>14</u>	<u>23</u>	<u>36</u>	<u>42</u>	<u>57</u>	<u>68</u>	<u>75</u>	<u>99</u>	<u>96</u>
(b)	22	73	56	34	49	88	65	77	85
	<u>9</u>	<u>8</u>	<u>5</u>	<u>7</u>	<u>2</u>	<u>3</u>	<u>6</u>	<u>4</u>	<u>6</u>

83

Make four interesting problems about Jack and the Bean Stalk. In your first problem use +; in your second problem use -; in your third problem use \times ; in your fourth problem use \div .

• 84

WRITTEN PROBLEMS

1. Mrs. Hodges spent \$43 for a dress and \$8 for a hat. How much did both cost her?
2. Ninety-one acres of my farm are planted in wheat. That is just half of my farm. How many acres do I own?
3. Frank is 52 inches tall and his brother is 9 inches taller. How tall is his brother?
4. Sarah has read 67 pages of *Black Beauty*. To-day she will read 4 pages more. How many pages will she have read by to-night?
5. There are 90 trees on our street. All of these are maple, except 18. How many maple trees are there?
6. A milliner has 21 roses to sell and 5 times as many daisies. How many daisies has she?
7. Henry caught 5 fish and his brother caught 16. How many fish did both catch?
8. Sam weighs 74 pounds. His weight is 7 pounds less than Jack's. How much does Jack weigh?
9. There are 137 houses on the east side of the street and 123 houses on the west side. How many more houses on the east side than on the west side? How many houses on the street?
10. A chicken lot is 30 feet wide and 50 feet long. How many feet of wire will be needed to fence it?
11. A hearth is 4 feet long and 2 feet wide. How many tiles 6 inches square will be needed for it? Make drawing.
12. What must be added to 36 to make 80?
13. Thirty-seven is 4 less than —.

85.

- | | |
|----------------------------|----------------------------|
| 1. $2 \times 30 + 3 + 8 =$ | 6. $3 \times 30 - 3 + 4 =$ |
| 2. $47 + 4 + 9 - 8 =$ | 7. $75 + 25 - 9 - 8 =$ |
| 3. $80 \div 2 + 5 + 6 =$ | 8. $63 + 8 - 4 - 3 =$ |
| 4. $95 - 40 - 3 + 9 =$ | 9. $60 \div 2 + 4 + 7 =$ |
| 5. $12 - 9 + 4 + 4 =$ | 10. $85 - 30 + 2 - 6 =$ |

86

Write in columns and add:

- | | |
|------------------|------------------|
| 1. 300; 200; 400 | 5. 213; 105; 342 |
| 2. 313; 201; 224 | 6. 44; 101; 245 |
| 3. 26; 621; 43 | 7. 83; 410; 7 |
| 4. 620; 48; 202 | 8. 721; 9; 130 |

87

Find the difference between:

1.	2.	3.	4.	5.	6.	7.	8.
800	600	600	780	468	390	579	680
<u>200</u>	<u>400</u>	<u>500</u>	<u>545</u>	<u>146</u>	<u>142</u>	<u>342</u>	<u>134</u>

88

Multiply:

1.	2.	3.	4.	5.	6.	7.	8.
232	434	112	304	101	243	110	423
<u>3</u>	<u>2</u>	<u>6</u>	<u>2</u>	<u>5</u>	<u>2</u>	<u>7</u>	<u>2</u>

89

Supply missing numbers:

73	49	64	38	56	27	42	85
<u>81</u>	<u>51</u>	<u>71</u>	<u>41</u>	<u>61</u>	<u>31</u>	<u>51</u>	<u>91</u>

WRITTEN PROBLEMS

1. There were 59 days in March and February in a certain year. Of these days, 12 were cloudy. How many were clear?
2. Find the cost of 6 baby carriages at \$21 each.
3. Mr. Olcott bought some groceries for \$624 and sold them for \$665. How much did he gain?
4. Nine mats of equal value were sold for \$18. For how much was each mat sold?
5. In one bin were 265 apples. This was 120 less than the number of apples in a second bin. How many apples in the second bin?
6. In one box are 144 lemons. How many lemons in 2 boxes?
7. My father is 3 years older than my mother, who is 28 years old. How old is my father?
8. Mr. Henry divided \$46 equally between his son and his daughter. How much did each get?
9. When a grocer opened a crate containing 60 eggs, he found that 11 were broken. How many eggs were not broken?
10. At 30 cts. for one pint of cream, how much did I pay for one quart? How much did I pay for one gallon?
11. In a flock of 264 sheep were 23 black ones. How many white sheep were there?
12. Mr. Adams raised 593 bushels of corn, which was 200 bushels more than Mr. Ryan raised. How many bushels did Mr. Ryan raise?
13. Jennie invited 28 friends to a picnic. All but 7 were able to accept. How many accepted her invitation?

91

WHAT I CAN LEARN BY MYSELF

Subtract — with counters if necessary:

Write *Think*

$$\begin{array}{r} 21 \\ - 2 \\ \hline 19 \end{array} \quad \begin{array}{r} 10 + 11 \\ - 2 \\ \hline 10 + 9 \end{array}$$

$$\begin{array}{rrr} 11 & 21 & 31 \\ - 2 & - 2 & - 2 \\ \hline & & \end{array} \quad \text{to} \quad \begin{array}{r} 91 \\ - 2 \\ \hline \end{array}$$

Continue with all the other possible subtractions from numbers ending in 1, or until the class thoroughly understands the principle.

92

- | | |
|-----------------------|--------------------------------|
| 1. $19 - 5 + 7 =$ | 6. $\frac{1}{2}$ of $14 + 4 =$ |
| 2. $2 \times 8 + 5 =$ | 7. $\frac{1}{2}$ of $12 + 5 =$ |
| 3. $11 - 7 + 15 =$ | 8. $\frac{1}{2}$ of $6 + 8 =$ |
| 4. $21 + 8 - 6 =$ | 9. $81 + 9 + 8 =$ |
| 5. $17 + 4 + 20 =$ | 10. $18 \div 2 + 2 =$ |

93

$$\begin{array}{ccccccccc} 4 & 6 & 5 & 8 & 7 & 2 & 3 & 9 & 3 \\ 6 & 4 & 5 & 2 & 3 & 8 & 7 & 9 & 7 \\ 9 & 7 & 8 & 5 & 2 & 4 & 5 & 6 & 8 \\ \hline 22 & 44 & 23 & 36 & 19 & 27 & 36 & 25 & 13 \\ 9 & 7 & 8 & 2 & 7 & 3 & 6 & 4 & 5 \\ 1 & 9 & 2 & 8 & 3 & 7 & 4 & 6 & 5 \\ 2 & 6 & 5 & 7 & 9 & 3 & 6 & 4 & 9 \\ \hline 49 & 55 & 66 & 74 & 62 & 48 & 75 & 37 & 52 \end{array}$$

Add the whole of the lowest number to the next above. Say, "Thirty-one, thirty-seven, forty-one," in adding the first example. After the pupils have added the columns as they stand, change the figure in tens place in each column (for example, in the first change 22 to 62) and proceed as before. This plan gives practice in all the decades.

94**BUNNIES — Oral**

1. Mother Bunny had three broods of rabbits one summer. There were 10 pairs of wiggly ears in the first brood, 12 pairs of bright eyes in the second brood, and 7 bunchy tails in the third brood. How many little rabbits were there in all?
2. The rabbits jumped out of the nest and began to run in exactly two weeks. How many days old were they? What part of a month is 2 weeks?
3. It wasn't long until the rabbits could leap 10 feet and hop 5 feet. One lively fellow leaped 4 times and hopped once. How many feet did he go?
4. Another smart rabbit hopped 25 feet while his mother watched him. Each of his hops was 5 feet long. How many hops did he take?

95**WRITTEN PROBLEMS**

1. Albert's kite cost 56 cents and his marbles 5 cents. How much did both cost?
2. At 5 cents each what will 21 pencils cost? ($21 \times 5 = 5 \times 21$).
3. In our room there are 33 pupils. This is 8 less than the number in the next room. How many pupils in the next room?
4. I have three quarters and a dime. How much money have I?
5. Mary planted 42 tulip bulbs in her garden. She needed 9 more. How many were needed in all?
6. John's pony cost \$45 and the cart \$6 more than the pony. How much did the cart cost?

7. If Fred feeds his chickens a pint of corn a day, how long will 8 quarts last him?
8. How many quart bags can be filled from 22 pints of peanuts?
9. Frank has \$.90 in his bank. This is \$.56 more than Mary has in her bank. How much money has Mary?
10. The clerk at the post office gave me ten 2-cent stamps and \$.80 in change. How much money had I given him?

96

DAILY FLASH PRACTICE

Subtract:

$$\begin{array}{r}
 \begin{array}{rrrrrrrr}
 21 & 31 & 41 & 51 & 61 & 71 & 81 & 91 \\
 4 & 3 & 5 & 2 & 7 & 6 & 8 & 9 \\
 \hline
 \end{array} \\
 \begin{array}{rrrrrrrr}
 61 & 21 & 81 & 51 & 41 & 91 & 71 & 31 \\
 5 & 2 & 7 & 3 & 6 & 9 & 4 & 8 \\
 \hline
 \end{array}
 \end{array}$$

97

DICTATION

1. $9 + 6 = ?$
2. Write 894 in words.
3. Farmer Jones has 61 fat pullets. He took all but a half-dozen to market. How many did he take to market?
4. He also took 2 baskets of eggs. In the first basket were 32 eggs. This was 9 less than the number of eggs in the second basket. How many eggs in the second basket?
5. I have \$80 in two banks. Fifty-five dollars are in the first bank. How much is in the second?

ABSTRACT TEST PAGE

Before proceeding to Part I, Section Two, it would be well to test the class upon the work of the preceding pages. The following exercises are given as several types which the class should do readily. A class per cent of not less than eighty should be required.

These pages can also be used for classes ready to begin Part II in September, as a means of revealing weaknesses that have developed during the summer vacation, particularly as a means of indicating individual children who may need extra help at once. Look carefully to see just where this help is needed, whether in certain combinations or in power to grasp a concrete situation.

I

Each child add two examples only:

1.	2.	3.	4.	5.	6.	7.	8.
5	7	3	6	4	3	29	8
20	14	10	10	30	20	70	30
<u>26</u>	<u>50</u>	<u>78</u>	<u>65</u>	<u>27</u>	<u>48</u>	<u>2</u>	<u>63</u>
9.	10.	11.	12.	13.	14.	15.	16.
40	6	30	16	7	14	62	16
6	25	9	43	31	52	5	84
<u>43</u>	<u>50</u>	<u>52</u>	<u>30</u>	<u>43</u>	<u>25</u>	<u>22</u>	<u>1</u>

II

Dictate two groups to the entire class — the pupil to write the answers only.

1.	2.	3.	4.	5.
$8 \div 2$	$79 - 5$	8×2	$18 \div 9$	$28 - 6$
$46 - 3$	$30 + 40$	$71 + 9$	$10 + 70$	7×2
2×9	$22 - 2$	$60 - 20$	2×8	$20 + 70$
$60 - 50$	2×8	$24 \div 2$	$80 - 30$	$16 \div 2$
$14 \div 7$	$12 \div 2$	$18 \div 2$	$16 \div 2$	$100 - 4$

CONCRETE TEST PAGE

III

Write answers only:

1. Write 94 in words.
2. $76 + 5 = ?$
3. If one half of a pie costs 7 cents, how much is the whole pie worth?
4. If Anna reads 25 pages in a story book each day for 3 days, how many pages does she read in all?
5. In one field are 36 cows. This is 20 less than the number of cows that are in a second field. How many cows are in the second field?

IV

Thirty minutes

Show all work:

1. There are 18 little flags on two front lawns. If they are equally divided, how many flags on each lawn?
2. A glove merchant paid \$24 for gloves at \$2 a pair. How many pairs did he buy?
3. In one box are 24 marbles. How many marbles in 2 boxes of the same size?
4. Of 81 apples on a tree, all but 6 were blown off. How many apples remained?
5. A man had 34 sheep and bought 57 more. How many sheep did he have then?
6. What must be added to 25 to make 51?
7. Eighty dollars is $\frac{1}{2}$ of my money. How much money have I?
8. Make a problem about 60 sheep — 32 sheep.

THE NUMBER TWELVE—CONCRETE

PART I—SECTION TWO



1

THE TOWN MOUSE VISITS THE COUNTRY MOUSE— *Oral*

1. When the Town Mouse took dinner with the Country Mouse she first offered the Town Mouse some wheat. But the Town Mouse ate only 3 of the 12 grains and the Country Mouse ate the rest. How many grains did the Country Mouse eat?
2. The Country Mouse then offered an apple. The Town Mouse took only 4 nibbles and the Country Mouse 8. How many nibbles did they both take?
3. "Let us try corn," said the Country Mouse. But the Town Mouse took only 5 tiny bites, which was 2 less than the number of bites that the Country Mouse took. How many bites did they both take?
4. Make us several problems about the visit that the Country Mouse made to the City Mouse. Base your problems on the number 12.

2**OUR CLOCK**

Who can move the hands of the clock so that they point to noon? What hour is noon? Write XII on the board.

What happens at six o'clock? Make our clock say "six o'clock." Write VI on the board.

How can I tell the hour hand from the minute hand?

Place the hour hand at IX and the minute hand at XII. What time is it?

Make the hands show the time at which you ate breakfast this morning. Write VII on the board.

XII, VI, IX, and VII are called Roman numerals. Tell us some of the places where you have seen them. Ask your teacher how they came to be called Roman numerals.

3**ROMAN NUMERALS**

On the clock find the Roman numeral that stands for 1; for 5; for 10. How is 2 made? How is 6 made? How is 11 made?

Copy the Roman numerals from the clock in this order and see if you can learn how to make them.

1 = I	6 = VI	11 = XI
2 = II	7 = VII	12 = XII
3 = III	8 = ?	13 = ?
4 = IV	9 = ?	14 = ?
5 = V	10 = ?	15 = ?
		4 = IIII or IV

4

DAILY FLASH PRACTICE

Supply the missing number:

3	9	7	6	8	4	5	2
---	---	---	---	---	---	---	---

$\overline{12}$							
-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------

The pupil who hesitates should return to making 12 through the method shown in Exercise 52, page 34. Continue this work as part of the daily lessons until the sums required are given automatically.

5

THE NEWSBOY — *Oral*

Supply question and answer:

1. On Monday Tom bought 31 papers and sold all but 3.
2. On Tuesday he sold 34 and had 7 left.
3. On Wednesday there was an "Extra" and he bought twice as many as he had sold on Tuesday.
4. On Thursday he sold 34, which was 6 less than he bought.
5. On Friday he bought $\frac{1}{2}$ as many as he bought on Thursday.
6. On Saturday he sold 32 papers at 2 cents each.

Continue.

6

Write in columns and add upward:

- | | |
|-----------------|-----------------|
| 1. 342; 25; 305 | 6. 217; 40; 213 |
| 2. 37; 152; 301 | 7. 468; 120; 2 |
| 3. 76; 212; 412 | 8. 424; 4; 372 |
| 4. 682; 17; 201 | 9. 12; 423; 365 |
| 5. 24; 63; 703 | 10. 705; 72; 3 |

WHAT I CAN LEARN BY MYSELF

With counters if necessary:

$$(a) \begin{array}{l} 100 \text{ units} = 10 \text{ tens} \\ 140 \text{ units} = 14 \quad ? \\ 160 \text{ units} = \quad ? \end{array}$$

$$(b) \begin{array}{l} 14 \text{ units} \div 2 = 7 \text{ units} \\ 14 \text{ tens} \quad \div 2 = 7 \text{ tens} \\ 16 \text{ tens} \quad \div 2 = ? \end{array}$$

	<i>Write</i>	<i>Think</i>
(c)	$\begin{array}{r} 2 \\ 7 \overline{) 14} \end{array}$ $\begin{array}{r} 20 \\ 7 \overline{) 140} \end{array}$ $\begin{array}{r} 21 \\ 7 \overline{) 147} \end{array}$	$\begin{array}{r} 20 + 1 \\ 7 \overline{) 140 + 7} \end{array}$
1.	$2 \overline{) 128}$	$4 \overline{) 128}$
5.	$8 \overline{) 168}$	$4 \overline{) 168}$
9.	$2 \overline{) 468}$	$3 \overline{) 363}$
2.	$3 \overline{) 126}$	$6 \overline{) 126}$
7.	$9 \overline{) 189}$	$6 \overline{) 600}$
10.	$2 \overline{) 242}$	$3 \overline{) 369}$

WRITTEN PROBLEMS

- After 28 yards were sold from a piece of bunting, there remained 3 yards. How many yards were in the piece at first?
- How many sheets in 2 boxes of 24 sheets each?
- A farmer sowed 119 bushels of oats and had 112 bushels left. How many bushels had he at first?
- How many oranges are there in 3 boxes, if one box contains 32 oranges?

5. On a certain street are 262 houses. One hundred thirty-one of the houses are on one side. How many houses are on the other side of the street? What part is on the other side?
6. How much older is father than Bessie, if father's age is 31 years and Bessie's is 3 years?
7. What is the cost of 300 fish at \$33 a hundred?
8. How many feet of matting in two pieces if there are 144 feet in each piece?
9. Sixty-four pints are how many quarts? Sixty-four quarts are how many pints?
10. Make a problem about 46 trees and 35 trees.
11. Our swing hangs from the limb of an oak which is 29 feet from the ground. The seat of the swing is 4 feet above the ground. How long a piece of rope did it take for the swing if the seat is 3 feet from end to end? Allow 3 feet for tying about the limb of the tree.
12. One box holds 2 dozen lemons and another 37 lemons. How many in both boxes?
13. A man owning 100 sheep sold 84 of them. How many had he left?
14. A book dealer had 190 books and sold 137. How many books had he left?
15. How much must be added to \$43 to make \$80?
16. Three boys owned 159 sheep in equal shares. How many sheep did each boy own?
17. How large a piece of cardboard must you have for a mat 3 inches wide around a picture 9 inches wide and 12 inches long? Make drawing.
18. How many square feet of linoleum will be needed for a bathroom 9 feet wide and 10 feet long? Drawing.



9

Subtract at sight:

1.	2.	3.	4.	5.
260	450	790	250	380
<u>134</u>	<u>317</u>	<u>438</u>	<u>131</u>	<u>242</u>

6.	7.	8.	9.	10.
360	940	750	820	290
<u>118</u>	<u>219</u>	<u>342</u>	<u>612</u>	<u>189</u>

10

WHAT I CAN LEARN BY MYSELF

Add — units first:

10

7

10

4

Write

$$\begin{array}{r} 17 \\ 14 \\ \hline 31 \end{array} \qquad \begin{array}{r} Think \\ 10 + 7 \\ 10 + 4 \\ \hline 20 + 11 \end{array}$$

Think

10
10
7
3
[1]

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
35	68	51	47	57	36	52	24	33	27
<u>46</u>	<u>23</u>	<u>49</u>	<u>34</u>	<u>32</u>	<u>15</u>	<u>28</u>	<u>57</u>	<u>56</u>	<u>34</u>

11

CAT AND MOUSE (*For Recess*)

The children stand in a circle, with the Mouse outside. The Mouse tags another child who becomes the Cat. When caught the Mouse calls any number, and is free if the Cat cannot instantly give the sum of 3 added to the number called.

12

Add downward at sight:

1.	2.	3.	4.	5.	6.
62	89	39	74	59	45
79	75	87	89	96	88
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
7.	8.	9.	10.	11.	12.
76	86	68	83	97	47
96	89	89	69	96	77
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
13.	14.	15.	16.	17.	18.
95	68	79	85	54	89
26	87	96	97	87	85
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
19.	20.	21.	22.	23.	24.
53	67	49	79	56	65
98	87	98	69	77	69
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

It is suggested that the teacher write one of these problems upon the board. As each child gets the answer he should rise and face the back of the room. When almost all of the pupils have risen a child should be called upon to give his answer. He and all others who have that answer sit. Those who fail should face the front and add the columns orally. The same method can be used with the other processes and if made a daily exercise will soon develop both accuracy and speed in the class.

13

Multiply at sight:

1.	2.	3.	4.	5.	6.
634	410	743	201	834	310
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
2	5	2	9	2	7
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

Divide at sight:

1. 7)707	2. 2)184	3. 5)155	4. 2)106	5. 6)126
-------------	-------------	-------------	-------------	-------------

14**WRITTEN PROBLEMS**

1. Frank and William bought a boat for \$28, each boy paying half. How much did each pay?
2. My hat cost \$7.50 and my jacket \$9.35. How much did they both cost?
3. Alice has 2 redbirds that eat a pint of seed each week. How long will 14 quarts last them?
4. I have three \$20 bills and one \$5 bill in my purse. How much money have I?
5. How many badges 5 inches long can be cut from 75 inches of ribbon?
6. Grandfather is 62 years old. He is just twice as old as father. How old is father?
7. A bridge across a creek is 178 feet long. This bridge is 23 feet shorter than a bridge lower down, over the same stream. How long is the second bridge?
8. At 40 cents a dozen, how much will $2\frac{1}{2}$ dozen eggs cost?
9. A drover sold in one day 32 cows, 45 hogs and 21 sheep. How many head of stock did he sell?
10. A clerk sold 32 yards of goods from a piece containing 160 yards. How many yards remained?
11. A fruit merchant sold 217 watermelons one day and had 24 left. How many melons had he at first?
12. Jack's suit cost \$13.50 and his overcoat \$11.65. How much did they both cost?
13. My ticket to Chicago cost \$4.50. I gave the agent a ten-dollar bill. How much change did he give me?
14. There are 84 yards of muslin in 4 pieces. If the pieces are of equal length, how long is each piece?

15**WHAT I CAN LEARN BY MYSELF**

Subtract — units first:

<i>Write</i>	<i>Think</i>	1.	2.	3.	4.	5.
51	$40 + 11$					
27	$20 + 7$	71	31	91	41	61
<u>24</u>	<u>$20 + 4$</u>	<u>26</u>	<u>13</u>	<u>78</u>	<u>26</u>	<u>14</u>
6.	7.	8.	9.	10.		
581	251	570	341	791		
<u>229</u>	<u>112</u>	<u>258</u>	<u>127</u>	<u>246</u>		

16**ORAL PROBLEMS**

1. In January of this year there were 7 snowy days. How many days did it not snow? January has 31 days.
2. In leap year February has 29 days. This is how many days fewer than January has?
3. Of the 21 marbles that John owned, 6 were crystals. How many were not crystals?
4. On one office chair are 4 castors. How many on 3 such chairs?
5. A milkman sold 20 quart bottles and 12 pint bottles of milk. How many quarts did he sell in all?
6. Ned had a box containing 31 caramels. He gave away 9. How many caramels had he left?
7. A boy earned 90 cents one week and spent 65 cents. How much money had he left?
8. There were 27 trees in the orchard and Mr. Douglas planted 14 more. How many trees were then in the orchard?

17

OF WHAT AM I THINKING?

Leader: I am thinking of 2 numbers that make 12.

First child: Is it 2×6 ?

Leader: No, it is not 2×6 .

Second child: Is it $5 + 7$?

Leader: Yes, it is 5 and 7. You are the leader.

18

Complete and learn — add:

$$\begin{array}{r}
 9 & 19 & 29 & \text{to} & 99 \\
 3 & 3 & 3 & & 3 \\
 \hline
 8 & 18 & 28 & \text{to} & 98 \\
 4 & 4 & 4 & & 4 \\
 \hline
 \end{array}$$

Continue with all the other combinations making a number ending in 2, or until the class thoroughly understands the principle.

19

DICTATION

1. Write 4 and 9 in Roman numerals.
2. $58 - 3 + 6 = ?$
3. Herman picked 15 red apples. This was 6 fewer than Fred picked. How many apples did Fred pick?
4. Uncle Jack has 41 apples in a basket. This is 9 more than he has in another basket. How many apples in the second basket?
5. Albert and Horace found an oar floating in the river. The boatman to whom it belonged gave them 15 cents each. How much money did they get?

20**WRITTEN PROBLEMS**

1. There are 38 children to-day in the first grade room and 43 children in the second grade room. How many children in both rooms?
2. There are the same number of children in the third grade room as in the fourth grade room and there are 86 children in both rooms. How many children in the third grade room?
3. In the bookcase are 3 shelves. On the lower shelf are 26 books, on the second shelf are 30 books, and on the top shelf are 25 books. How many books are on all the shelves?
4. What number is 26 more than 45?
5. What number is 37 less than 51?
6. Harriet has read 68 pages of a story book and Alma has read just half as many pages. Question?
7. A boy worked 37 hours in one week. This was 14 hours fewer than his father worked. Question?
8. Fred earned 41 cents yesterday. How much can he spend and still have a nickel left?
9. Mary wishes to make an apron which will take 63 inches of gingham. She has 91 inches. How many inches of gingham will she have left?
10. When 27 of a class of 41 pupils are writing at the blackboard, how many are at their seats?
11. Two trains entered the station at the same time. On the first were 366 passengers which was 51 passengers more than on the second. How many passengers on the second train?
12. A farmer raised 275 bushels of potatoes this year. This is 36 bushels fewer than he raised last year. How many bushels did he raise last year?

21*Divide at sight:*

1. $9\overline{)189}$	2. $5\overline{)105}$	3. $3\overline{)906}$	4. $4\overline{)800}$	5. $2\overline{)128}$
6. $6\overline{)606}$	7. $7\overline{)714}$	8. $8\overline{)160}$	9. $2\overline{)846}$	10. $5\overline{)150}$
11. $3\overline{)129}$	12. $6\overline{)600}$	13. $9\overline{)189}$	14. $4\overline{)128}$	15. $7\overline{)714}$

22*Add upward as in Exercise 93, page 54:*

1.	2.	3.	4.	5.	6.	7.	8.
7	5	6	3	4	4	6	3
3	5	4	7	8	6	2	7
5	9	4	6	7	3	8	6
<u>17</u>	<u>73</u>	<u>28</u>	<u>66</u>	<u>35</u>	<u>59</u>	<u>74</u>	<u>46</u>
9.	10.	11.	12.	13.	14.	15.	16.
3	8	6	9	3	3	6	3
7	3	4	2	7	9	4	7
6	3	5	9	3	7	8	4
<u>16</u>	<u>68</u>	<u>37</u>	<u>72</u>	<u>49</u>	<u>54</u>	<u>60</u>	<u>78</u>

23

1.	2.	3.
$48 + 3$	2×33	$68 + 2$
$84 \div 2$	$88 \div 4$	$51 - 46$
32×3	$96 \div 3$	3×23
$82 - 75$	$27 + 5$	$46 + 6$
$69 + 3$	2×43	$64 \div 2$
$56 + 6$	$81 - 4$	$91 - 8$

24**ORAL PROBLEMS**

1. Five sleds are coasting down hill with 2 boys and 1 girl on each sled. How many children are coasting?
2. How much will half a pound of cheese cost at \$.18 a pound?
3. How much butter at \$.40 a pound can be bought for \$.60?
4. Ray gives his pony an apple every morning and every evening. How many apples does the pony get in a week?
5. William bought 3 dozen eggs. Mother took one dozen for cooking, and William put the others under two hens. If he put the same number under each hen, how many eggs were in each nest?
6. Last month Mr. French made \$92. This is \$5 less than he made this month. How much did he make this month?
7. Frank earned \$.23 planting corn on Monday. This was \$.09 less than he made on Tuesday. How much did he make on Tuesday?
8. One Saturday morning grandmother gave Katie \$.75. On the way home Katie spent \$.21 for a new doll. How much money had she left?

25

Add at sight — units first:

27	46	73	38	55	74	43	26	68	59
15	36	19	44	27	18	29	36	14	23
<hr/>									
69	67	74	39	17	48	54	13	36	23
21	24	18	12	34	42	27	38	45	18

26

A CHRISTMAS PARTY



We are going to have a Christmas Party! Of course the cakes are star shaped, and oh! we shall need so many, for we have invited Miss Allen's pupils to the party. Here is the pattern (paper) for each of you and you may see who can make the most cookies.

Now let us bake our cookies. Our pans (Draw rectangles on the blackboard. Wet paper stars so that they will adhere temporarily to the board) are just wide enough for three cookies placed side by side but they differ in length. Harold's pan, which is the smallest, holds only 3 cookies; Frank's pan holds 6; and Miss Stevens's holds 36.

$$\begin{array}{r}
 3 \quad 3 \\
 \bar{3} \quad 3 \\
 \bar{6} \quad 3 \\
 \bar{9} \quad 3 \\
 ? \quad 3 \\
 ? \quad ? \quad 3 \\
 ? \quad ? \quad ? \quad 3 \\
 ? \quad ? \quad ? \quad ? \quad 3 \\
 ? \quad ? \quad ? \quad ? \quad ? \quad 3 \\
 ? \quad ? \quad ? \quad ? \quad ? \quad ? \quad 3 \quad 3 \quad 3 \quad 3 \quad 3 \quad 3 \\
 \hline
 & & & & & & & & & & & 36
 \end{array}$$

27

MULTIPLYING AND DIVIDING BY THREE

Complete and learn:

$$1 \times 3 = 3$$

$$3 \div 3 = 1$$

$$2 \times 3 = 6$$

$$6 \div 3 = 2$$

$$\bullet \times 3 = 9$$

$$9 \div 3 = 3$$

to

to

$$12 \times 3 = 36$$

$$36 \div 3 = 12$$

28

WRITTEN PROBLEMS

1. It is 48 miles from Bluffton to Astoria and 14 miles farther to Clinton. How far is it from Bluffton to Clinton?
2. Mabel was present 84 days. There were 91 days in the term. How many days was she absent?
3. A hatter spent \$96 for hats at \$3 each. How many hats did he buy?
4. James had \$15 and his father lent him \$27. With the sum he bought a pony. How much did the pony cost?
5. James made \$3 a week with his pony and a small wagon which his father lent him. How long did it take him to pay his debt of \$27?
6. James then bought the wagon of his father for \$24. How long did it take him to pay for the wagon?
7. Next James bought himself some clothing for \$18. How long did it take him to earn the money?
8. James is 12 years old. His father is 3 times as old. How much older is the father than James?
9. When James is 21 years old, how old will his father be?

29

ROMAN NUMERALS

Read:

(a)	(b)	(c)	(d)
I	IV	VI	IX
XI	XIV	XVI	XIX
XXI	XXIV	XXVI	XXIX

Write:

(a)	(b)	(c)	(d)	(e)
7	3	5	4	8
17	13	15	14	18
27	23	25	24	28

Continue to 48.

Before attempting this exercise the pupil should be able to read the Roman numerals on the face of the clock (changing IIII to IV). Exercise 3, page 60, should have further prepared him on the principles of construction.

30

- | | |
|-------------------|------------------|
| 1. 324×2 | 6. $840 \div 4$ |
| 2. 223×3 | 7. $906 \div 3$ |
| 3. 103×5 | 8. $550 \div 5$ |
| 4. 421×2 | 9. $648 \div 2$ |
| 5. 203×4 | 10. $448 \div 4$ |

31

A RACE

Write the answers in the Table of Threes in order. Stand as soon as you have finished that we may know which row of pupils works the best. Begin with 36 and count backward by 3's. Continue until you can all write them rapidly.

32

WRITTEN PROBLEMS

1. A man started on a business trip. On the first day he went 48 miles; on the next 34 miles, and on the third day he returned 50 miles. How far was he then from home?
2. In a school are 36 girls and 26 boys. Question?
3. In the pantry are 3 shelves each holding 82 cans of fruit. How many cans are there in all?
4. John had 91 cabbage plants set out. The heat killed 27. Then he set out 30 more. How many had he then? Do you see two ways to solve this?
5. My flower bed is 24 feet long and $\frac{1}{3}$ as wide. How long is the path around it which is 2 feet wide?
6. Frank has a rope that is 150 feet long. Question?
7. A postman delivers 240 letters in three blocks. If he delivers $\frac{1}{3}$ of the letters in one block, how many does he deliver in the other two?
8. Measure your desk and give its length.
9. From a tank containing 671 gallons of water, 437 gallons were drawn out. How much water remained?
10. Two men leave Chicago. One travels directly east 417 miles and the other directly west 365 miles. How far apart are they?
11. A postman delivers 659 letters in the morning which is 46 more than he delivers in the afternoon. How many does he deliver all day?
12. At \$85 each, how much did a dealer pay for 2 stoves?
13. It is 23 miles to Greencastle. This is $\frac{1}{3}$ of the distance to Macon. How far is it to Macon? How far is it from Greencastle to Macon?

33

Add upward at sight:

1.	2.	3.	4.	5.	6.	7.	8.
79	68	65	34	24	75	86	88
45	75	58	77	97	84	45	53
94	36	54	99	19	17	89	59
37	98	32	83	76	89	38	37
65	93	76	19	26	12	64	65

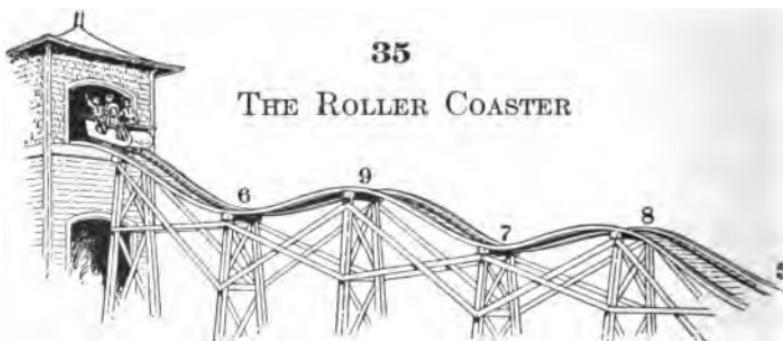
34

Subtract at sight:

1.	2.	3.	4.	5.	6.	7.	8.
732	852	682	492	681	642	511	672
516	527	479	374	405	513	507	568
9.	10.	11.	12.	13.	14.	15.	16.
780	461	562	430	981	372	490	561
436	227	349	122	767	128	276	156

35

THE ROLLER COASTER



Draw a track upon the board similar to the one in the picture. Place a digit at each bend of the curve. The child who takes a ride pays a nickel and then gives the product of each of the digits multiplied by three. Time limit, $\frac{1}{2}$ minute.

36

MULTIPLICATION — *continued*

Complete and learn — show with counters:

$$4 \times 3 = 12$$

$$3 \times 4 = 12$$

$$5 \times 3 = 15$$

$$3 \times 5 = 15$$

$$6 \times 3 = 18$$

$$3 \times 6 = 18$$

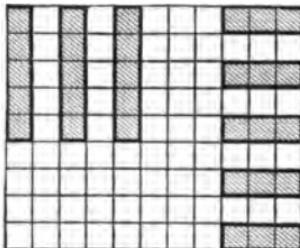
to

$$12 \times 3 = 36$$

$$3 \times 12 = 36$$

$$3 \times 5$$

$$5 \times 3$$



3	3	3	3	3
5	5	5	5	5

37

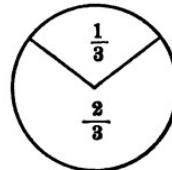
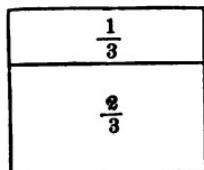
ORAL PROBLEMS

1. Some boys are having a snowball fight. On one side are 13 small boys and on the other 9 large boys. How many boys are there in all?
2. Our cow gave 6 quarts of milk this morning and 9 pints this evening. How many pints did she give in all?
3. Grace has some cherries which she is tying into bunches of 3 each. She can make 9 bunches. How many cherries has she?
4. I bought 3 pounds of butter at \$.32 a pound. How much did I pay for it?
5. Last summer 32 children rode to the picnic in the first wagon. This was 4 more than rode in the second wagon. How many children rode in the second wagon?

38



One rabbit is $\frac{1}{3}$ of 3 rabbits.
Two rabbits are $\frac{2}{3}$ of 3 rabbits.



Complete and learn:

$$\frac{1}{3} \text{ of } 3 = 1$$

$$\frac{2}{3} \text{ of } 3 = 2$$

$$\frac{1}{3} \text{ of } 6 = 2$$

$$\frac{2}{3} \text{ of } 6 = 4$$

$$\frac{1}{3} \text{ of } 9 = 3$$

$$\frac{2}{3} \text{ of } 9 = 6$$

to

to

$$\frac{1}{3} \text{ of } 36 = 12$$

$$\frac{2}{3} \text{ of } 36 = 24$$

See that the pupils get the idea of doubling $\frac{1}{3}$ to get $\frac{2}{3}$.

39

$$1. \quad \frac{1}{3} \text{ of } 24 =$$

$$6. \quad 3 \times 11 =$$

$$2. \quad \frac{1}{3} \text{ of } 30 =$$

$$7. \quad 24 \div 12 =$$

$$3. \quad \frac{1}{3} \text{ of } 24 =$$

$$8. \quad 82 + 9 =$$

$$4. \quad 27 \div 3 =$$

$$9. \quad 27 \div 3 =$$

$$5. \quad 21 \div 3 =$$

$$10. \quad 56 - 20 =$$

40

Complete and learn:

$$3 \div 1 = 3$$

$$6 \div 2 = 3$$

$$9 \div 3 = 3$$

to

$$36 \div 12 = 3$$

41**AT THE BAKERY — Dramatize**

You may each have 50 cents to spend. Buy what you like after telling how much each of these children paid for his purchase.

1. Henry bought $\frac{1}{2}$ dozen doughnuts at 20 cents a dozen.
2. Alice bought $1\frac{1}{3}$ dozen dinner rolls at 12 cents a dozen.
3. Jack bought 6 raspberry tarts at 16 cents a dozen.
4. Mary bought 4 cream puffs at 30 cents a dozen.
5. Frank bought $2\frac{1}{2}$ dozen buns at 20 cents a dozen.

**42**

1.	2.	3.
$36 \div 3$	$27 \div 9$	4×20
2×9	2×7	$18 \div 3$
$24 \div 8$	$22 \div 2$	3×9
3×7	8×2	$21 \div 7$
$18 \div 2$	$20 \div 4$	$27 \div 3$
3×8	$24 \div 3$	6×3

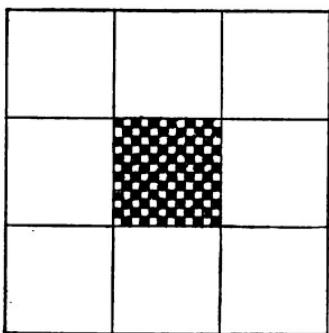
Continue.

43***Subtract at sight:***

1.	2.	3.	4.	5.
<u>732</u>	<u>671</u>	<u>962</u>	<u>851</u>	<u>382</u>
<u>429</u>	<u>358</u>	<u>407</u>	<u>546</u>	<u>174</u>
6.	7.	8.	9.	10.
<u>529</u>	<u>617</u>	<u>827</u>	<u>915</u>	<u>426</u>
<u>376</u>	<u>545</u>	<u>364</u>	<u>681</u>	<u>293</u>

44

SQUARE MEASURE



On the blackboard draw a square exactly one yard each way. Divide each side into 3 equal parts and connect the opposite points. How large is each small square? Divide each side of the center square into 12 equal parts and connect the opposite points. How large is each tiny square?

Complete and learn:

- square inches make 1 square foot.
- square feet make 1 square yard.

45

WRITTEN PROBLEMS

1. In a certain store are 2 dozen dining-room chairs and 7 office chairs. How many chairs are there in all?
2. Alice passed 6 sheets of paper to each of 3 rows of children. How many sheets did she pass in all?
3. Albert had a half dollar and spent all but 9 cents for materials for a kite. How much did the kite cost him?
4. If a rug is sold for \$9, how many like it can be bought for \$27?
5. I had \$33 and spent $\frac{1}{3}$ of it. What part had I left? How much was it?

6. In an orchard are 21 trees standing in 3 equal rows. What part of the orchard is in 2 rows? How many trees in 2 rows? Drawing.
7. How many pints of cider in a jar containing $16\frac{1}{2}$ quarts?
8. In a pin tray are 6 needles and 22 pins. How many more pins are there than needles?
9. A grocer paid \$1.76 for a bushel of potatoes and sold them for \$1.90. How much did he make on 2 bushels?
10. Lawrence had a kite string 142 feet long. He lost 25 feet of it in a tree. How many feet were left?
11. What is the cost of 3 desks at \$14 each? Solve both by addition and by multiplication.
12. How many yards of fencing shall I need to make both a front and a back fence for my lot which is 36 feet wide?
13. When calico is 3 cents a yard, how much will 96 yards cost?
14. There are 3 windows in the dining-room. At each window hang two curtains each 2 yards long. How much scrim did it take for the curtains if 3 inches were allowed both at the top and at the bottom of each curtain for hems? Drawing.
15. Tulips were planted 6 inches apart in a single row across the front of the house which is 40 feet wide. How many tulips did it take if the front steps are 8 feet long? Drawing.
16. Mary weighs 75 pounds and Kate weighs 53 pounds. How much do they both weigh?
17. A stock dealer has 156 cows in 3 stables, the same number in each. How many cows in each stable?
18. How many balls in 16 roman candles if each candle contains 3 balls? ($3 \times 16 = 16 \times 3$).

46

DICTATION

1. Write 743 in words.
2. Write 12 and 16 in Roman numerals.
3. Our crocus bed has 24 yellow crocuses in it. These are $\frac{1}{2}$ of all the crocuses in the bed. How many are there in all?
4. There are 42 scarlet tulips in the tulip bed. Half of that bed is in bloom. Question?
5. I picked 16 white hyacinths and left 6 purple hyacinths in the bed. Question?

47

WHAT I CAN LEARN BY MYSELF

Multiply — units first:

Write Think

24	20 + 4	1.	2.	3.	4.
3	3	26	45	13	52
<u>72</u>	<u>60 + 12</u>	<u>2</u>	<u>3</u>	<u>9</u>	<u>5</u>

5.	6.	7.	8.	9.	10.	11.	12.
87	28	32	23	76	13	56	78
<u>3</u>	<u>3</u>	<u>8</u>	<u>6</u>	<u>3</u>	<u>7</u>	<u>3</u>	<u>2</u>

48

Add upward at sight:

1.	2.	3.	4.	5.	6.	7.	8.
68	34	78	75	74	36	75	74
75	77	45	88	47	74	83	97
36	99	96	14	99	93	16	19
98	86	38	82	36	83	88	73
<u>93</u>	<u>16</u>	<u>63</u>	<u>16</u>	<u>65</u>	<u>16</u>	<u>14</u>	<u>29</u>

49

WRITTEN PROBLEMS

1. How many square feet in a floor containing 12 square yards?
2. In one book are 33 pages; in a second book are 46 pages and in a third book are 73 pages. How many pages in all of the books?
3. A piece of cloth 186 yards long was cut into 3 equal pieces. How many yards in each piece?
4. How much will 45 yards of velvet cost at \$3 a yard?
5. A grocer bought 63 bushels of potatoes and sold $\frac{1}{3}$ of them. How many bushels did he sell? What part of his potatoes did he keep?
6. Mr. Brown has 84 acres in timber. This is $\frac{1}{2}$ of his farm. How many acres in his farm?
7. A tailor sold 3 suits of clothes at \$39 each. How much did he get for them all?
8. A team of horses was sold for twice its cost. The team cost \$236. How much was received for it?
9. A hod carrier can take 18 bricks at one trip. How many can he carry in 3 trips?
10. Mr. Sims paid \$35 for a suit of clothes, \$5 for a hat, and \$6 for a pair of shoes. How much change did he receive from a fifty-dollar bill?
11. Mr. Leavens had \$960 in the bank and drew out $\frac{1}{3}$ of his money. How much did he leave in the bank?
12. At 9 cents a square yard how much will it cost to oil a floor 3 feet wide and 9 feet long? Drawing.
13. Albert paid \$.32 for his reader, \$.46 for his geography and \$.24 for his arithmetic. How much change did he get from a two-dollar bill?
14. Make a problem for $\$84 \times 3$.

50*Complete and learn:*

$$\frac{1}{3} \text{ of } 3 = 1$$

$$\frac{1}{3} \text{ of } 6 = 2$$

$$\frac{1}{3} \text{ of } 9 = 3$$

to

$$\frac{1}{3} \text{ of } 36 = 12$$

$$1 \text{ is } \frac{1}{3} \text{ of } 3$$

$$2 \text{ is } \frac{1}{3} \text{ of } 6$$

$$3 \text{ is } \frac{1}{3} \text{ of } 9$$

to

$$12 \text{ is } \frac{1}{3} \text{ of } 36$$

51*Multiply:*

1.	2.	3.	4.	5.	6.	7.	8.
49	23	63	31	82	41	25	54
<u>2</u>	<u>8</u>	<u>2</u>	<u>6</u>	<u>3</u>	<u>2</u>	<u>3</u>	<u>2</u>
<u> </u>							

9.	10.	11.	12.	13.	14.	15.	16.
93	24	45	39	75	26	73	38
<u>3</u>	<u>5</u>	<u>3</u>	<u>3</u>	<u>2</u>	<u>3</u>	<u>2</u>	<u>3</u>
<u> </u>							

52

3 × 70	150 + 5	6 × 30
180 + 3	9 × 30	120 + 4
5 × 30	210 + 7	3 × 80
240 + 8	3 × 60	150 + 3
3 × 90	270 + 9	7 × 30

53*Add at sight:*

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
72	23	48	47	67	35	56	42	56	93
<u>53</u>	<u>92</u>	<u>81</u>	<u>72</u>	<u>52</u>	<u>94</u>	<u>73</u>	<u>75</u>	<u>62</u>	<u>34</u>
<u> </u>									

54**ORAL PROBLEMS**

1. How many wings have 26 pigeons?
2. Anna spent 35 cents for a reader and had 7 cents left. How much had she at first?
3. How much must I pay for 2 dozen eggs at 32 cents a dozen?
4. How much must I pay for a pound and a half of tea at \$.80 a pound?
5. The sum of two numbers is 31. One of the numbers is 23. What is the other?
6. How much will a pint of maple syrup cost at 28 cents a quart?
7. Nine bricks half-fill a hod. How many bricks will fill a hod?
8. How many pairs of gloves at \$2 a pair can be bought for \$30?
9. Nell is 12 years old. Her mother is 19 years older. How old is her mother?
10. At 15 cents a yard, how many yards of calico can be bought for 30 cents?
11. At 3 cents each, how much will a dozen picture post cards cost?
12. How many hours in 2 days?
13. How many days in 3 weeks?
14. When 2 skeins of silk cost 18 cents, how much does 1 skein cost?
15. How much will 3 bunches of celery cost at 12 cents a bunch?
16. I had 32 cents and spent a quarter of a dollar for grass seed. How much money had I left?
17. Make a problem about 6×20 miles.
18. What number is 125 greater than 375?

55

1.	2.	3.
$\frac{1}{3}$ of 27	$\frac{1}{2}$ of 16	$\frac{1}{3}$ of 24
$\frac{1}{2}$ of 18	$\frac{1}{3}$ of 21	$\frac{1}{2}$ of 24
$\frac{1}{2}$ of 24	$\frac{1}{3}$ of 33	$\frac{1}{3}$ of 18
$\frac{1}{3}$ of 36	$\frac{1}{2}$ of 14	$\frac{1}{2}$ of 18
$\frac{1}{2}$ of 26	$\frac{1}{3}$ of 15	$\frac{1}{3}$ of 30
$\frac{1}{3}$ of 18	$\frac{1}{2}$ of 22	$\frac{1}{2}$ of 30

56

Subtract at sight:

1.	2.	3.	4.	5.
726	314	825	517	607
<u>673</u>	<u>281</u>	<u>691</u>	<u>364</u>	<u>432</u>
6.	7.	8.	9.	10.
524	460	851	740	703
<u>381</u>	<u>327</u>	<u>639</u>	<u>558</u>	<u>421</u>
11.	12.	13.	14.	15.
917	780	825	505	431
<u>694</u>	<u>506</u>	<u>672</u>	<u>341</u>	<u>271</u>

57

Add at sight:

1.	2.	3.	4.	5.	6.
342	217	38	469	76	44
25	40	132	120	212	506
306	214	301	2	413	283
414	682	13	24	705	47
5	7	423	63	72	69
<u>372</u>	<u>202</u>	<u>345</u>	<u>704</u>	<u>4</u>	<u>73</u>

58

MERRY CHRISTMAS! JUST SEE OUR TREE!—Written

1. There are 3 dozen candles on the tree. How many candles are there?

2. How much did the candles cost at 2 cents each?

3. One third of the candles are white, and the remainder are red. How many are red?

4. There are 15 silver balls and 17 gold balls on the tree. How many balls are there in all?

5. There are 21 toys on the tree. Eight of these are for the baby. How many toys are for the rest of us?

6. There are 18 other gifts for the boys, which is 4 less than the number of other gifts for the girls. How many other gifts for the girls?

7. We paid 75 cents for the tree and $\frac{2}{3}$ as much for the tinsel. How much did we pay for the tinsel?

8. We also bought 5 holly wreaths for which we paid 75 cents. How much did we pay for each holly wreath?

9. Make another problem about the tree.



WRITTEN PROBLEMS

1. Write 306 in words.
2. Write thirty-seven and forty-nine in Roman numerals.
3. How many inches in 2 yards? In 3 yards?
4. Anna has a spool of thread with 50 yards of thread on it. How many feet of thread is that?
5. If you know the number of pints of milk in a can, how can you find the number of quarts?
6. How many iron holders 6 inches square can be cut from a square yard of denim? Drawing.
7. A meat platter is 6 inches wide and 9 inches long. I wish to have a doily that will come out 2 inches beyond the edge of the platter. How long and how wide must the doily be?
8. A bushel of barley weighs 48 pounds. How much do 3 bushels weigh?
9. Three acres of land cost \$279. How much did one acre cost?
10. Mrs. Smith owned 240 fat young pullets. She sold $\frac{1}{3}$ of them in September. How many did she sell? What part did she have left? How many did she have left?
11. Of 719 passengers on a train 74 were children. How many of the passengers were grown people?
12. In $\frac{1}{3}$ of my farm are 24 acres. How many acres in the whole farm? How many acres in $\frac{2}{3}$ of it? Drawing.
13. In a certain hothouse 279 carnation plants were in bloom and 43 were not. How many carnation plants were there in all?
14. Take 396 from 418; 482 from 503.

60**MY BEDROOM — Oral**

1. My bedroom is 10 feet high. It has a baseboard 1 foot high. How many yards long is each strip of wall paper?

2. On each strip of paper are 2 white bands running lengthwise. On the left band are 6 wreaths of roses and on the right band are 7 wreaths. How many wreaths on both bands?

3. There are 8 full-blown and 5 half-blown roses in each wreath. How many roses in each wreath?

4. I shall buy a grass matting rug for \$1.00. This is 3 feet wide and requires fringe at both ends. How much will the fringe cost at 15 cents a yard? How much will the entire rug cost?

5. I shall hem 4 long and 9 short towels. How many hems will they require?

6. In the room I shall place a small alarm clock to awaken me at half-past six each morning. Make a drawing on the board to show the position of the hands at half-past six.

61**DAILY FLASH PRACTICE**

(a) Supply the missing number:

4	8	7	9	5	6
---	---	---	---	---	---

13	13	13	13	13	13
----	----	----	----	----	----

(b) Add:

7	9	5	5	4	3	6	9
6	2	7	8	7	9	5	4
<u>—</u>							
8	7	6	9	6	9	7	9
5	4	5	4	7	2	5	3
<u>—</u>							

62

DAILY FLASH PRACTICE

Subtract:

(a)	13	13	13	13	13	13
	9	5	6	4	8	7
	—	—	—	—	—	—
(b)	12	11	13	11	12	13
	8	4	7	6	5	8
	—	—	—	—	—	—

63*Multiply:*

1.	2.	3.	4.	5.	6.
32	78	23	59	54	36
9	3	8	3	5	3
—	—	—	—	—	—
7.	8.	9.	10.	11.	12.
67	32	57	68	49	92
3	6	2	3	2	3
—	—	—	—	—	—

64

396 ÷ 3	186 ÷ 6	105 ÷ 5
246 ÷ 2	243 ÷ 3	248 ÷ 8
217 ÷ 7	124 ÷ 4	189 ÷ 3
273 ÷ 3	279 ÷ 9	808 ÷ 4
155 ÷ 5	680 ÷ 2	188 ÷ 2

65*Add:*

1.	2.	3.	4.	5.	6.
434	464	834	575	779	988
577	677	477	584	445	735
499	439	599	817	894	496
583	396	386	489	437	642
419	595	616	712	465	259
—	—	—	—	—	—

66

WHAT I CAN LEARN BY MYSELF

<i>Write</i>	<i>Think</i>	<i>Write</i>	<i>Think</i>
1. $\begin{array}{r} 15 \\ - 9 \\ \hline 6 \end{array}$	$10 + 5$ $\underline{9}$ $1 + 5$	2. $\begin{array}{r} 17 \\ - 8 \\ \hline 9 \end{array}$	$10 + 7$ $\underline{8}$ $2 + 7$
3. $\begin{array}{r} 14 \\ - 5 \\ \hline \end{array}$	4. $\begin{array}{r} 11 \\ - 3 \\ \hline \end{array}$	5. $\begin{array}{r} 15 \\ - 6 \\ \hline \end{array}$	6. $\begin{array}{r} 16 \\ - 5 \\ \hline \end{array}$
8. $\begin{array}{r} 15 \\ - 7 \\ \hline \end{array}$	9. $\begin{array}{r} 13 \\ - 6 \\ \hline \end{array}$	10. $\begin{array}{r} 15 \\ - 8 \\ \hline \end{array}$	11. $\begin{array}{r} 13 \\ - 7 \\ \hline \end{array}$
13. $\begin{array}{r} 11 \\ - 7 \\ \hline \end{array}$	14. $\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$	15. $\begin{array}{r} 14 \\ - 8 \\ \hline \end{array}$	16. $\begin{array}{r} 13 \\ - 9 \\ \hline \end{array}$
18. $\begin{array}{r} 16 \\ - 9 \\ \hline \end{array}$	19. $\begin{array}{r} 13 \\ - 8 \\ \hline \end{array}$	20. $\begin{array}{r} 12 \\ - 7 \\ \hline \end{array}$	21. $\begin{array}{r} 17 \\ - 9 \\ \hline \end{array}$
			22. $\begin{array}{r} 13 \\ - 5 \\ \hline \end{array}$

67

WHAT I CAN LEARN BY MYSELF

Complete:

100	1000	$10 = 10$ units
200	2000	$100 = 10$ —
300	3000	$1000 = 10$ —
to	to	
1000	10,000	$10,000 = 10$ —

(a) *Read:*

1,450; 3,465; 6,718; 9,002.
4,800; 4,080; 4,008; 4,848.

In writing numbers it will be well for you to place a comma between the hundreds and the thousands, as 4,800.

(b) *Write in figures:*

1. Nine thousand seven.
2. Nine thousand seventy.
3. Nine thousand seven hundred.
4. Nine thousand seventeen.

Continue this type of work as a daily exercise until the class can write readily any number requiring four places.

68

Multiply:

1.	2.	3.	4.	5.
200	300	401	404	234
4	2	3	2	3

6.	7.	8.	9.	10.
421	343	274	245	123
2	3	2	3	5

11.	12.	13.	14.	15.
347	169	258	196	417
3	2	3	3	2

69

Add upward:

1.	2.	3.	4.	5.	6.
945	597	849	597	794	918
789	566	567	751	844	469
219	434	432	138	155	444
458	457	755	864	649	458
645	656	458	249	474	651

70

ORIGINAL PROBLEMS

Make and solve five problems using the following:

- | | |
|------------------------|--------------------------------|
| 1. 3 apples) 18 apples | 4. \$26 cost of bed |
| 2. 3) 24 roses | + \$15 cost of dresser |
| 3. 12 flags
× 3 | 5. 42 children
— 3 children |

Note the pupils who do not yet distinguish between examples like 1 and 2, and give them special attention.

71

WRITTEN PROBLEMS

1. In a school of 419 pupils, 167 are boys. How many girls are there in the school?
2. A horse that cost \$182 was sold at a gain of \$18. How much was it sold for?
3. Eighteen dollars was gained on a horse that was sold for \$182. How much had it cost?
4. Write in words 309; 390.
5. A ranchman sold 92 sheep. This was 4 sheep more than he had left. How many sheep had he left?
6. The ranchman paid an average price of \$85 for 3 cows. How much did he pay for them all?
7. Mr. Hendrickson paid \$56 for a wagon. This was $\frac{1}{2}$ of what he paid for a horse. How much did the horse cost him?
8. A boy picked 3 quarts of cherries and sold them at 12 cents a pint. How much did he receive for them?

9. How much must be added to \$485 to make \$617?
10. Albert read 31 pages in a book every night for a week. How many pages did he read in the week?
11. How many inches in $\frac{1}{3}$ of a yard? How many inches in $\frac{2}{3}$ of a yard?
12. How many pints in $24\frac{1}{2}$ quarts?
13. How much will 3 dozen oranges cost at 3 cents each?
14. Yesterday it snowed from 8 o'clock in the morning until noon. How many hours did it snow?
15. I have a piece of tape 28 inches long. How many inches will be left after I cut off $\frac{1}{3}$ of a yard?
16. Which is cheaper, to pay 5 cents for a street car ride or to pay with a ticket when 25 tickets cost a dollar?
17. A rug three yards long is laid in the middle of a hall floor 18 feet long. How much bare floor at each end of the rug? Make drawing.
18. Sam weighs 82 pounds. He has gained 9 pounds since his last birthday. How much did he weigh then?
19. I paid \$.50 for a tie, \$.75 for handkerchiefs and \$1.50 for a pair of gloves. How much did I pay for all?
20. Anna made a quilt for her doll's bed of pieces 2 inches square. The quilt was 12 inches long and 10 inches wide. How many pieces did she use? Drawing.
21. I had \$5.25 and spent \$.75 for some violets. How much did I have left?
22. I have \$60 in three bills of equal denomination. How much money is one bill worth?
23. James ate his luncheon at half-past twelve. Five hours later he ate his supper. At what time did he eat his supper?
24. What must be added to 675 to make 792?

72*Add at sight:*

1.	2.	3.	4.
2000	3400	6275	4473
<u>6000</u>	<u>4500</u>	<u>2917</u>	<u>3768</u>

73**WHAT I CAN LEARN BY MYSELF**

Learn by yourself how to prove whether your answer in subtraction is correct or not. In the problems

$\begin{array}{r} 7 \\ - 4 \end{array}$ and $\begin{array}{r} 62 \\ - 27 \end{array}$ what must you do to the answer 3 to get 7? To 35 to get 62?

That is, $\begin{array}{r} 3 \text{ and } 35 \\ + ? \quad + ? \\ \hline 7 \quad 62 \end{array}$ Hereafter prove or check all your answers in subtraction.

Subtract:

1.	2.	3.	4.
2000	7956	6081	7250
<u>1000</u>	<u>5243</u>	<u>3679</u>	<u>3947</u>

5.	6.	7.	8.
5607	3148	9680	2725
<u>4463</u>	<u>2735</u>	<u>5438</u>	<u>1682</u>

9.	10.	11.	12.
6056	3807	6143	2627
<u>4843</u>	<u>1432</u>	<u>5622</u>	<u>2594</u>

74

Multiply:

1.	2.	3.	4.
857	263	479	323
<u>2</u>	<u>3</u>	<u>2</u>	<u>8</u>
5.	6.	7.	8.
568	376	232	698
<u>2</u>	<u>3</u>	<u>9</u>	<u>3</u>

75

ORAL PROBLEMS

1. Harry has 13 cents in one pocket and 9 cents in another. How much money has he in both pockets?
2. I spent 37 cents for coffee and had a nickel left. How much money had I at first?
3. How many 2-cent stamps can I buy for a quarter?
4. Some boys quartered a pie and each took a piece. All the pie was eaten. How many boys were there?
5. A three-story building has 9 windows in the front of each story. How many windows are in the front of the building?
6. Alice is 6 years old. She is $\frac{1}{3}$ as old as Aunt Helen. How old is Aunt Helen?
7. Which is longer, a foot or $\frac{2}{3}$ of a yard? How much?
8. I gave a quarter for 8 apples at 3 cents each. How much change did I receive?
9. What number subtracted from 92 will leave 7?
10. I left home at 9 o'clock in the morning and returned at 3 in the afternoon. How many hours was I gone?

76

DAILY FLASH PRACTICE

$$(a) \begin{array}{r} 13 \\ - 9 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ + 8 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ - 6 \\ \hline \end{array} \quad \begin{array}{r} 8 \\ + 5 \\ \hline \end{array} \quad \begin{array}{r} 12 \\ - 9 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ + 6 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ - 5 \\ \hline \end{array} \quad \begin{array}{r} 9 \\ + 2 \\ \hline \end{array}$$

$$(b) \begin{array}{r} 3 \\ + 8 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ - 7 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ - 4 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ + 9 \\ \hline \end{array} \quad \begin{array}{r} 11 \\ - 7 \\ \hline \end{array} \quad \begin{array}{r} 7 \\ + 5 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ - 8 \\ \hline \end{array} \quad \begin{array}{r} 4 \\ + 7 \\ \hline \end{array}$$

77

DICTATION

1. Write 44 and 39 in Roman numerals.
2. Write 5 cents and 50 cents, using the dollar sign.
3. What number must be added to 3 to make 32?
4. Tom's kite string was 81 yards long, but it caught in the telegraph wires and 3 yards were lost. How long was it then?
5. Mr. Henderson had 4 cows and bought enough more to make 22 in all. How many cows did he buy?

78

Find quotients:

- | | |
|------------------|-------------------|
| 1. $2196 \div 3$ | 8. $1550 \div 5$ |
| 2. $4068 \div 2$ | 9. $1260 \div 6$ |
| 3. $8046 \div 4$ | 10. $1482 \div 2$ |
| 4. $2466 \div 6$ | 11. $2790 \div 9$ |
| 5. $2480 \div 8$ | 12. $1248 \div 4$ |
| 6. $6860 \div 2$ | 13. $2469 \div 3$ |
| 7. $2409 \div 3$ | 14. $2177 \div 7$ |

79

Add and write your answers in words:

1. One thousand seven hundred seventeen; two thousand twenty-two; three thousand three; five thousand fifteen; five hundred five.
2. 4916; 33; 2046; 544; 1458.
3. 3637; 258; 47; 3216.
4. 2766; 4003; 839; 1314.
5. 3035; 454; 77; 2655.

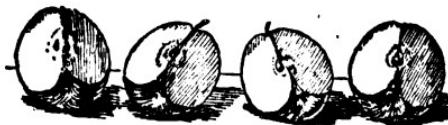
80

WRITTEN PROBLEMS

1. A grocer buys tea at 85 cents a pound and sells it at 98 cents. How much does he make on 3 pounds?
2. How much did Kate pay for two dolls at \$1.28 each?
3. Our family uses 84 pints of milk in 4 weeks. How many pints do we use in one week? In one day?
4. My uncle is 41 years old. He is 17 years older than my aunt. How old is my aunt?
5. When flour is 7 cents a pound, how many pounds can be bought for \$2.10? Change dividend to cents.
6. Alice has 32 postage stamps. This is $\frac{1}{3}$ of the number her mother has. Question?
7. A watch cost \$52 and the chain cost \$25. How much more did the watch cost than the chain?
8. Tom sold his papers for \$.80 and gained \$.13. How much had they cost?
9. How much will $2\frac{1}{2}$ yards of fringe cost at \$.40 a yard?
10. A grocer sells 36 eggs at \$.48 a dozen. How much does he get for them?

81

APPLE DUMPLINGS



1. Do you like apple dumplings? You may help grandmother make a dozen. She puts 4 pieces of apple into each dumpling (tissue paper). How many pieces of apple will she use for 2 dumplings? For 4 dumplings? For 12 dumplings?

$$\begin{array}{r}
 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 \hline
 8 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 ? & \overline{4} & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 ? & \overline{4} & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 ? & \overline{4} & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 ? & \overline{4} & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 ? & \overline{4} & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 ? & \overline{4} & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 ? & \overline{4} & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 & 4 \\
 \hline
 & & & & & & & & & & & 48
 \end{array}$$

Complete and learn:

$$\begin{aligned}
 1 \times 4 &= 4 \\
 2 \times 4 &= 8 \\
 3 \times 4 &= 12 \\
 &\text{to} \\
 12 \times 4 &= 48
 \end{aligned}$$

82

Complete and learn — add:

$$\begin{array}{r} 9 \\ 4 \\ \hline \end{array} \quad \begin{array}{r} 19 \\ 4 \\ \hline \end{array} \quad \begin{array}{r} 29 \\ 4 \\ \hline \end{array} \quad \text{to} \quad \begin{array}{r} 99 \\ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ 5 \\ \hline \end{array} \quad \begin{array}{r} 18 \\ 5 \\ \hline \end{array} \quad \begin{array}{r} 28 \\ 5 \\ \hline \end{array} \quad \text{to} \quad \begin{array}{r} 98 \\ 5 \\ \hline \end{array}$$

Continue with all the other combinations making numbers ending in 3, or until the class thoroughly understands the principle.

83

ORAL PROBLEMS

1. If $\frac{1}{2}$ pound of lard costs 6 cents, how much will a pound cost?
2. How much did I pay for $\frac{1}{2}$ pound of candy at \$.30 a pound?
3. What is the price of 7 pounds of meal at 3 cents a pound?

4. Add: $\begin{array}{r} 57 \\ 25 \\ \hline \end{array}$ $\begin{array}{r} 63 \\ 18 \\ \hline \end{array}$ $\begin{array}{r} 34 \\ 49 \\ \hline \end{array}$ $\begin{array}{r} 48 \\ 34 \\ \hline \end{array}$ $\begin{array}{r} 26 \\ 45 \\ \hline \end{array}$

5. Subtract: $\begin{array}{r} 91 \\ 16 \\ \hline \end{array}$ $\begin{array}{r} 72 \\ 25 \\ \hline \end{array}$ $\begin{array}{r} 41 \\ 17 \\ \hline \end{array}$ $\begin{array}{r} 92 \\ 26 \\ \hline \end{array}$ $\begin{array}{r} 80 \\ 45 \\ \hline \end{array}$

6. Multiply: $\begin{array}{r} 26 \\ 2 \\ \hline \end{array}$ $\begin{array}{r} 32 \\ 3 \\ \hline \end{array}$ $\begin{array}{r} 41 \\ 5 \\ \hline \end{array}$ $\begin{array}{r} 72 \\ 3 \\ \hline \end{array}$ $\begin{array}{r} 64 \\ 2 \\ \hline \end{array}$

7. Divide: $2\overline{)64}$ $2\overline{)86}$ $3\overline{)96}$ $4\overline{)84}$ $2\overline{)68}$

8. There are 30 days in April, 31 days in May and 30 days in June. How many days in the three months?

84

BUYING THRIFT STAMPS — *Oral*

1. How many thrift stamps at 25 cents each can Robert buy with 75 cents?
2. Albert brought \$1.00, Mabel 50 cents and Virginia 25 cents with which to buy thrift stamps. How many did they buy in all?
3. Nellie bought 2 thrift stamps from the postman. She received 5 cents in change. What pieces of money had she given him?
4. Charles will receive \$5 in 1923 for a baby bond for which he paid \$4.23. How much interest will he receive?
5. Macy cleared \$1.60 last week on his newspaper route. He spent all of his money except 10 cents for thrift stamps. How many did he buy?
6. What was the cost of Laura's 16 thrift stamps?
7. Pearl had a two-dollar bill. She purchased 5 thrift stamps. How much change did she receive?
8. Francis brought \$1.75 which is all the money he has saved in his bank. How many thrift stamps can he buy?
9. If every child in our school of 40 saved 5 cents a week for 5 weeks, how many thrift stamps could they all buy?
10. If every child in our school of 40 saved 5 cents a week for 20 weeks, how many thrift stamps could each one buy?

Write the following upon the board, using the dollar sign:

- a. five cents c. five dollars e. one dollar five cents
- b. fifty cents d. five dollars fifty cents

85*Subtract:*

1.	2.	3.	4.	5.
<u>6092</u>	<u>5160</u>	<u>6287</u>	<u>6271</u>	<u>4072</u>
<u>4857</u>	<u>3954</u>	<u>4786</u>	<u>4956</u>	<u>1468</u>

6.	7.	8.	9.	10.
<u>8032</u>	<u>5142</u>	<u>9071</u>	<u>7250</u>	<u>6172</u>
<u>6729</u>	<u>1726</u>	<u>5658</u>	<u>4739</u>	<u>5534</u>

86

DAILY FLASH PRACTICE

Subtract:

<u>83</u>	<u>72</u>	<u>93</u>	<u>61</u>	<u>53</u>	<u>82</u>	<u>71</u>
<u>7</u>	<u>9</u>	<u>8</u>	<u>5</u>	<u>4</u>	<u>5</u>	<u>6</u>
<u>41</u>	<u>63</u>	<u>82</u>	<u>71</u>	<u>23</u>	<u>92</u>	<u>31</u>
<u>4</u>	<u>6</u>	<u>8</u>	<u>3</u>	<u>9</u>	<u>3</u>	<u>9</u>

87MULTIPLICATION — *continued*

4	4	4	4	4	4	4
6		6		6		6

Complete and learn:

$$6 \times 4 = 24$$

$$4 \times 6 = 24$$

to

$$12 \times 4 = 48$$

$$4 \times 12 = 48$$

88

FROM A DUTCH CANAL BOAT — *Written*

1. What fun to ride in a canal boat! Have you been noticing the windmills as we pass along? I have just counted 16 of them, painted red, green, blue or yellow. Each mill has 4 great white sails! How many sails have these 16 windmills?

2. The windmills stand upon a great dike to our right which is 90 feet across. The roadway which runs along the middle of the top of the dike is 40 feet across. How much land is upon each side of the roadway? Drawing.

3. Beyond in the field, we can see black and white cattle feeding upon the greenest of grass. One herd has 44 cattle which is 29 less than the number in a second herd. How many cattle in the second herd?

4. Edam cheese, the finest in the world, is made from the milk of the cows of Holland. In our boat are 200 cheeses ready for shipping to America. They cost the captain 30 cents each and he sells them at 80 cents. How much does he make on all of them?

5. To our left are fields and fields of gorgeous tulips.



On our boat are two piles of tulip bulbs. The first contains 268 scarlet tulip bulbs and the second 365 yellow tulip bulbs. If they should all come to our Park how many flowers would we see next spring?

89

Add downward:

1.	2.	3.	4.	5.	6.	7.	8.
17	37	15	38	12	36	28	23
24	15	26	24	29	16	33	19
<u>29</u>	<u>39</u>	<u>48</u>	<u>26</u>	<u>17</u>	<u>17</u>	<u>36</u>	<u>48</u>

Add upward:

9.	10.	11.	12.	13.	14.
765	674	87	769	557	645
543	698	532	469	43	438
495	94	466	388	159	28
34	454	43	52	236	651
<u>374</u>	<u>465</u>	<u>584</u>	<u>253</u>	<u>377</u>	<u>564</u>

90

Complete and learn:

$$4 \div 4 = 1$$

$$4 \div 1 = 4$$

$$8 \div 4 = 2$$

$$8 \div 2 = 4$$

to

to

$$48 \div 4 = 12$$

$$48 \div 12 = 4$$

91

Find the difference between:

- | | |
|------------------|------------------|
| 1. 4257 and 7062 | 5. 4714 and 6130 |
| 2. 4023 and 1719 | 6. 6321 and 4617 |
| 3. 3618 and 8133 | 7. 2849 and 6072 |
| 4. 9320 and 5413 | 8. 5163 and 2337 |

92**DICTATION**

1. Write 1046 in words.
2. Write 36 and 49 in Roman numerals.
3. I bought a pair of gloves for \$2.50. How much change did I get from a five-dollar bill?
4. A grocer sold 2 quarts of maple syrup at 25 cents a pint. How much did he receive for it?
5. I paid 84 cents for ribbon and 9 cents for pins. How much did I spend?
6. There are 23 boys in our class. At recess 9 of them played baseball and the rest looked on. How many boys looked on?
7. Forty-two eggs make how many even dozen? How many eggs over?

93

Harry had 3 sticks of candy. He gave Albert one half of his candy. How much candy did each boy then have?

Give each child a quantity of wooden toothpicks and ask him to illustrate problems like the foregoing until he is able to construct the table below.

Complete and learn:

$$2 \div 2 = 1$$

$$3 \div 2 = 1\frac{1}{2}$$

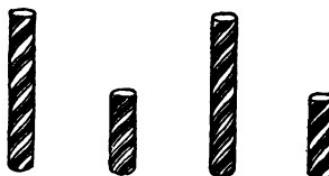
$$4 \div 2 = 2$$

$$5 \div 2 = 2\frac{1}{2}$$

to

$$19 \div 2 = 9\frac{1}{2}$$

$$1\frac{1}{2} + 1\frac{1}{2} = 3$$



94

WRITTEN PROBLEMS

1. Nelson added two numbers and his answer was 5093. One of the numbers was 3617. What was the other?
2. Mr. Smith shipped 4 dozen oranges from Florida. When the box was opened, $\frac{1}{4}$ of them was spoiled. How many good oranges were in the box?
3. In a certain bolt of goods were 32 yards. How many dress patterns can be cut from the bolt, if 8 yards are required for each dress?
4. What four equal numbers make 44?
5. In one barrel of vinegar are 31 gallons. How many gallons in 3 barrels? In four barrels?
6. An automobile travels 84 miles in 4 hours. How many miles does it average in one hour?
7. Which is cheaper: I wear out 4 pairs of \$6.00 shoes in a year or 3 pairs of \$10.00 shoes in 2 years?
8. If it takes 3 gallons of milk to make 1 pound of butter, how many gallons of milk will be required to make 27 pounds?
9. If the food for one person costs \$3.50 for one week, how much will the food for 5 people cost for that time?
10. Harry bought 4 dozen flags at 4 cents each. How much did he pay for them?
11. How many feet of wire netting must I buy to fence in my chicken yard which is 124 feet long and 93 feet wide? Drawing.
12. At \$24 a dozen, how much will 48 silver table spoons cost?
13. How many eggs in $4\frac{1}{2}$ dozen? How many dozen in 30 eggs?

MAKING CIDER — *Dramatize*

1. Farmer Brown has invited us three boys to help him make cider. First he gives us quart measures and tells us we may each have the cider from a peck of apples. How many times must a quart measure be filled to make a peck?

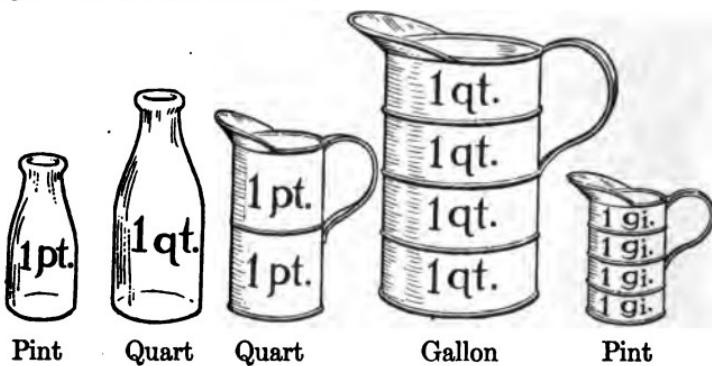
2. Now the cider begins to come. That jar holds just 1 gallon. A peck of these apples makes 3 quarts of cider. The gallon jar will hold — quarts.

3. Now our cider is made and we shall help Farmer Brown with his. We each fill a peck measure and Farmer Brown fills one, too. Our 4 pecks just fill the hopper of the press. What single measure would fill the hopper once? Farmer Brown's apples fill the hopper 10 times. He has 10 — of apples.

4. If 1 peck of apples makes 3 quarts of cider, 1 bushel will make — quarts, or — gallons.

5. Farmer Brown will have — gallons of cider.

Would all apples yield just this quantity of cider to the peck? Why? Cider made by more powerful machinery than a hand press yields more to the bushel. Why? Use actual measures.



Complete and learn:

- pints make 1 quart.
- quarts make 1 gallon.



Bushel



Peck



Quart

Complete and learn:

- pints make 1 quart.
- quarts make 1 peck.
- pecks make 1 bushel.

96

THE MERRY-GO-ROUND



Appoint a man to take nickels from the riders and a timekeeper to watch the clock. The machine runs for one minute only. Who can ride the farthest in that time? If you make a mistake it stops the machine and you must get off. Take $\frac{2}{3}$ of each of the numbers found on the saddles. If this is too difficult, try $\frac{1}{2}$ first.

97

1.

2.

3.

4.

$$7 \div 2$$

$$19 \div 2$$

$$18 \div 3$$

$$24 \div 3$$

$$15 \div 2$$

$$21 \div 2$$

$$20 \div 4$$

$$24 \div 4$$

$$9 \div 2$$

$$17 \div 2$$

$$21 \div 3$$

$$25 \div 2$$

$$13 \div 2$$

$$11 \div 2$$

$$23 \div 2$$

$$27 \div 3$$

A thorough preparation on the uneven division tables will greatly relieve the burden of division as a process later on.

98

WRITTEN PROBLEMS

1. There are 27 children in our class. Two thirds of the class had perfect papers to-day. How many failed? What part failed?
2. Aunt Sarah had \$64.50 in the bank and put in \$58.75 more. How much money had she then in the bank?
3. One foot is what part of a yard? Two feet are what part of a yard? Examine the yardstick.
4. I sold a cow for \$92 and gained \$14. How much had the cow cost?
5. A maple tree in our school yard is 49 feet high. It is 24 feet lower than an elm. How high is the elm?
6. Farmer Brown put 40 gallons of cider into quart bottles. How many bottles did he use?
7. After spending \$28, I had three times that amount left in my purse. How much money had I in my purse? Draw a line to represent all the money I had at first. Divide it so as to show the part spent and the part left. Name each part.
8. How much will 6 dozen eggs cost at \$.43 a dozen?
9. Mr. Hopkins earned \$33 a week and spent \$18. Mr. Meeker earned \$31 and spent \$15. Which man saved the more money each week?
10. How many yards of linoleum a yard wide shall I need to cover the floor of a hall 9 feet long and 6 feet wide?
11. Helen is 7 years old September 11. Sarah is 8 years old September 13. How much older is Sarah than Helen?

ABSTRACT TEST PAGE

Before proceeding to Part II it would be well to test the class upon the work of the preceding pages. The following exercises are given as several types which the class should do readily. A class per cent of not less than 80 should be required.

These pages can also be used for classes ready to begin Part II in September, as a means of revealing weaknesses that have developed during the summer vacation, particularly as a means of indicating individual children who may need extra help at once. Look carefully to see just where this help is needed, whether in certain combinations or in power to grasp a concrete situation.

I

Each child add one example only.

1.	2.	3.	4.	5.	6.
74	37	59	66	47	63
49	74	83	92	53	46
27	57	52	48	69	77
<u>76</u>	<u>44</u>	<u>69</u>	<u>83</u>	<u>54</u>	<u>35</u>

II

Dictate one group to the entire class — the pupil to write the answer only.

1.	2.	3.	4.	5.
4×8	2×6	3×9	9×2	4×5
$27 \div 3$	$16 \div 2$	$24 \div 3$	$18 \div 2$	$21 \div 3$
$27 + 5$	$39 + 4$	$56 + 5$	$79 + 3$	$84 + 9$
3×7	8×4	4×6	5×5	4×9
$31 - 8$	$42 - 7$	$63 - 9$	$91 - 4$	$82 - 8$
8×2	9×3	3×8	4×11	3×6
$26 \div 2$	$14 \div 4$	$14 \div 3$	$15 \div 2$	$13 \div 3$
4×12	4×7	5×3	2×7	4×4

CONCRETE TEST PAGE

III

Write answers only:

DICTATION

1. $24 + 8 - 9 = ?$
2. I wish to find the 19th Psalm in the Bible. For what Roman numeral shall I look?
3. Kate lives 6 blocks from school and Mary lives $\frac{1}{2}$ as far. How far away does Mary live?
4. I have 9 little chickens. One third of them is black and the remainder are yellow. How many little yellow chicks have I?
5. How many inches in 1 foot? How many inches in 1 yard?

IV

THIRTY MINUTES

Show all work:

1. A nursery containing many fine young trees which had cost \$5000 was sold for double its cost. What was the selling price?
2. Alice read 47 pages of a book on Monday; 35 pages on Tuesday; and 23 pages on Wednesday. How many pages did she read in the three days?
3. What must be paid for 54 yards of tape at 3 cents a yard?
4. How many square feet are there in a bathroom floor which contains 12 square yards?
5. A grocer bought a firkin of butter weighing 36 pounds. He sold $\frac{1}{3}$ of it. How many pounds did he sell? What part of the butter remained?
6. A tract of land extending 210 feet along the street was divided into 3 lots of equal size. What was the width of each lot?

PART II — SECTION ONE

1

HARU, THE LITTLE GIRL IN JAPAN — *Oral*

1. It is the third day of the third month — just the time of the Dolls' Festival in Japan. To-day all the dolls in the kingdom will be brought out for three days. What are the dates of the Dolls' Festival?

2. Haru has 10 dolls of her very own, 17 that belonged to her mother when she was a little girl, 27 that were her grandmother's and 50 that belonged to her great-grandmother. How many dolls has Haru in all?

3. Haru's dolls are of every kind. The emperor doll who sits on a throne is 94 years old. Haru is just 7 years old. How much older is he than Haru?

4. Her four dozen child dolls are the most fun. There are 9 boy dolls and 5 baby dolls and the remainder are girl dolls. How many girl dolls are there?

5. To-day Haru is to have a new doll. Her father has given her 16 sen (Japanese money). Sixteen sen is equal to 8 cents in our money. Her mother has given her 12 sen which is equal to — cents in our money. How much money has Haru in all?

2

DICTATION

1. (a) Write 43 and 28 in Roman numerals.
(b) $83 - 6 + 7 =$
2. In a class of 21 children, $\frac{2}{3}$ were boys. How many girls in the class?
3. How much must I pay for $1\frac{1}{2}$ quarts of cream at 40 cents a quart?
4. Roy had 22 marbles, which were 5 more than Frank had. How many marbles had Frank?
5. How much must I pay for $2\frac{1}{4}$ yards of braid at \$.15 a yard? How many feet long is the braid?

3

DAILY FLASH PRACTICE

(a) Add:

5	8	8	5	9	7	6	7
<u>9</u>	<u>3</u>	<u>6</u>	<u>7</u>	<u>5</u>	<u>6</u>	<u>8</u>	<u>4</u>

(b) Subtract:

14	13	14	12	14	11	14	13
<u>8</u>	<u>7</u>	<u>5</u>	<u>8</u>	<u>6</u>	<u>2</u>	<u>9</u>	<u>6</u>

4

ORIGINAL PROBLEMS

Make and solve five problems using the following:

1. 38 horses
 $+ 25$ horses
 $\underline{ }$
2. 24 marbles
 $\times 9$
3. $4\overline{)36}$ eggs
4. $\$92$
 $- \underline{\hspace{2cm}}$
5. 8 boys $\overline{)32}$ boys

5

4×90	$240 \div 6$	$320 \div 4$
$210 \div 7$	8×40	4×70
8×30	$200 \div 5$	$360 \div 9$
$280 \div 4$	3×90	6×40
6×30	$120 \div 3$	$160 \div 4$

6

1.	2.	3.	4.
$32 \div 4$	$36 \div 9$	$44 \div 4$	$28 \div 4$
$24 \div 4$	$20 \div 4$	$21 \div 3$	$27 \div 3$
$48 \div 4$	$32 \div 8$	$48 \div 12$	$36 \div 4$
$28 \div 7$	$12 \div 3$	$24 \div 6$	$24 \div 3$

7

Find the difference between:

- | | |
|------------------|------------------|
| 1. 4759 and 5063 | 5. 6170 and 4826 |
| 2. 2836 and 8342 | 6. 4516 and 6123 |
| 3. 5240 and 2713 | 7. 4362 and 1758 |
| 4. 3926 and 5071 | 8. 5812 and 9341 |

8

Add upward:

1.	2.	3.	4.	5.	6.
778	694	565	794	998	679
421	489	787	289	392	449
547	848	545	542	849	564
464	424	589	728	473	656
569	286	765	389	667	428
<u>543</u>	<u>585</u>	<u>347</u>	<u>984</u>	<u>744</u>	<u>555</u>

Many teachers find it of advantage for the pupils to add in time or rhythm, gradually increasing the speed. The impulse of the rhythm serves to keep the mind directly upon the combinations.

9

WHAT I CAN LEARN BY MYSELF

If 1 marble costs 2¢, 10 marbles will cost — ¢.

If 1 apple costs 3¢, 10 apples will cost — ¢.

If 1 bottle of ink costs 5¢, 10 bottles will cost — ¢.

If an automobile goes 15 miles an hour, in 10 hours it will go — miles.

If a boy delivers 25 newspapers a day, in 10 days he will deliver — papers.

If a lace collar costs 56 cents, 10 such collars will cost — cents.

$$10 \times 2 = 20 \quad 10 \times 15 = 150 \quad 10 \times 56 = 560 \\ 10 \times 3 = ? \quad 10 \times 25 = ? \quad 10 \times 34 = ?$$

Can you see a quick way to multiply by 10?

10

1.

2.

3.

4.

$$11 \div 2$$

$$16 \div 4$$

$$36 \div 12$$

$$19 \div 2$$

$$27 \div 3$$

$$21 \div 2$$

$$24 \div 3$$

$$28 \div 7$$

$$32 \div 4$$

$$24 \div 4$$

$$13 \div 2$$

$$23 \div 2$$

$$15 \div 2$$

$$28 \div 4$$

$$21 \div 3$$

$$18 \div 3$$

$$18 \div 6$$

$$17 \div 2$$

$$32 \div 8$$

$$25 \div 2$$

11

Multiply:

1.

2.

3.

4.

5.

6.

$$\underline{647}$$

$$\underline{234}$$

$$\underline{698}$$

$$\underline{234}$$

$$\underline{879}$$

$$\underline{412}$$

$$\underline{4}$$

$$\underline{5}$$

$$\underline{2}$$

$$\underline{9}$$

$$\underline{2}$$

$$\underline{7}$$

7.

8.

9.

10.

11.

12.

$$\underline{894}$$

$$\underline{432}$$

$$\underline{689}$$

$$\underline{423}$$

$$\underline{765}$$

$$\underline{243}$$

$$\underline{4}$$

$$\underline{7}$$

$$\underline{3}$$

$$\underline{6}$$

$$\underline{4}$$

$$\underline{6}$$

12*Add upward:*

1.	2.	3.	4.	5.	6.
669	654	475	856	867	995
758	669	754	773	452	986
447	573	476	779	956	834
564	956	533	433	844	295
535	589	668	435	445	454
857	473	434	656	668	549

13

- | | |
|------------------------------|------------------|
| 1. $\frac{2}{3}$ of 12 + 4 = | 6. 12 ÷ 4 + 9 = |
| 2. $\frac{1}{4}$ of 36 + 3 = | 7. 53 - 7 + 5 = |
| 3. $\frac{1}{4}$ of 24 + 3 = | 8. 81 - 8 - 8 = |
| 4. $\frac{2}{3}$ of 18 + 3 = | 9. 2 × 11 - 9 = |
| 5. $\frac{2}{3}$ of 9 + 4 = | 10. 73 - 9 + 8 = |

14**WHAT I CAN LEARN BY MYSELF**

(a) <i>Write</i>	<i>Think</i>	(b) <i>Write</i>	<i>Think</i>
$\begin{array}{r} 15 \\ 2 \overline{) 30 } \end{array}$	$10 + 5$	$\begin{array}{r} 26 \\ 2 \overline{) 52 } \end{array}$	$20 + 6$
	$2) 20 + 10$		$2) 40 + 12$

1. $2\overline{) 70}; 2\overline{) 90}; 2\overline{) 32}; 2\overline{) 54}.$
2. $2\overline{) 36}; 2\overline{) 58}; 2\overline{) 76}; 2\overline{) 98}.$
3. $2\overline{) 33}; 2\overline{) 55}; 2\overline{) 77}; 2\overline{) 99}.$
4. $2\overline{) 35}; 2\overline{) 67}; 2\overline{) 78}; 2\overline{) 95}.$

15**DICTION**

1. $\frac{2}{3}$ of 12 \times 3 =
2. $43 + 9 - 4 =$
3. Forty-three children belong in our room. Thirty-nine children are present. How many are absent?
4. Seven boys sit in the first row. Each boy has 4 pockets. How many pockets have all the boys?
5. Six girls sit in the second row. This is $\frac{1}{3}$ of all the girls present. How many girls are present?

16**WRITTEN PROBLEMS**

1. Mr. Craig had a dozen boxes of candy that weighed 3 lb. each. He put the candy into half-pound boxes. How many boxes did he use?
2. A book case contained 248 books on its 4 shelves. If there were an equal number of books on each shelf, how many books were on each?
3. Father hired the pony cart for Alice for $2\frac{1}{2}$ hours. How much did he pay for it at 80 cents an hour?
4. Four boxes of equal size each holding 240 assorted apples were shipped by an Oregon fruit dealer. How many apples were in all the boxes?
5. At the rate of 12 miles an hour, how long will it take an automobile to go 480 miles?
6. Three boys hired a boat at \$.20 an hour for 6 hours. How much did they pay for the boat? How much did each one pay if they shared equally?
7. A boy goes to bed at 9 o'clock and gets up at 6 o'clock the next morning. How many hours is he in bed?

17

Add:

1.	2.	3.	4.	5.	6.
\$7.65	\$8.69	\$7.35	\$6.97	\$.46	\$5.46
.54	.59	5.65	2.03	3.75	.27
4.65	7.44	7.74	9.25	2.09	.34
5.44	3.65	.75	.64	4.45	.05
4.84	.57	6.57	3.18	7.83	.74
5.19	<u>5.46</u>	<u>4.55</u>	<u>5.25</u>	<u>9.75</u>	<u>.82</u>

18

ORAL PROBLEMS

1. How many inches in $\frac{1}{4}$ of a foot? In $\frac{1}{3}$ of a foot?
2. On your ruler show us $\frac{1}{2}$ of an inch. $\frac{1}{4}$ of an inch.
3. Draw a line which you think is 3 inches long.

Measure and see if you are correct.

4. A street vender has 23 quarts of peanuts and sells 9 quarts. How many quarts has he left? Pints?
5. There are 37 children present in school to-day and 6 absent. How many children belong to our school?
6. There are 12 panes of glass in one window. How many panes in 10 windows?
7. How many stripes in the American flag? How many of each color?
8. How many stars in the flag? How are they arranged?
9. Mr. Brown had 36 cows after selling 5. How many had he at first?
10. I paid \$.48 for a dozen papers of pins. How much were they a paper?
11. How many months in a year and a half?
12. How many quarts in 2 pecks? In 2 gallons?

13. Seven acres are sold from a farm containing 82 acres. How many acres remained?
14. Sam was absent from school 6 weeks. This was $\frac{1}{3}$ of the term. How many weeks in the term?
15. Mr. Jackson made 12 gallons of maple syrup and bottled it in quart bottles. How many bottles did he use?
16. How much will 8 marbles cost at 2 cents each?
17. How much will 8 marbles cost at 2 for 1¢?
18. How many marbles can be bought for 8¢ at 2 cents each?
19. How many marbles can be bought for 8¢ at 2 for 1¢?

Make sure that the pupils distinguish the types in the last four problems.

19

Find the difference between:

- | | |
|------------------|------------------|
| 1. 3429 and 5073 | 5. 4160 and 1843 |
| 2. 5382 and 2657 | 6. 2836 and 7041 |
| 3. 6283 and 5965 | 7. 4745 and 5071 |
| 4. 1244 and 4152 | 8. 4736 and 9360 |

20

- | | | |
|----------------|-----------------|------------------|
| 1. $37 \div 2$ | 6. $75 \div 2$ | 11. $169 \div 3$ |
| 2. $98 \div 2$ | 7. $93 \div 2$ | 12. $378 \div 9$ |
| 3. $56 \div 2$ | 8. $41 \div 2$ | 13. $224 \div 7$ |
| 4. $87 \div 2$ | 9. $28 \div 8$ | 14. $180 \div 4$ |
| 5. $43 \div 2$ | 10. $31 \div 4$ | 15. $252 \div 6$ |

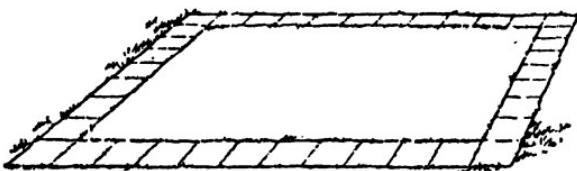
21

Add at sight:

1.	2.	3.	4.	5.	6.	7.	8.
96	49	75	28	67	54	85	39
85	83	68	97	96	79	66	87

22**WRITTEN PROBLEMS**

1. One and one half feet are what part of a yard?
How many inches in $1\frac{1}{2}$ feet?
2. In an orchard of 72 trees, one third is apple
and the rest are peach trees. How many of each kind
of tree are there? What part of the orchard is peach?
3. A carpenter leaves home at 7:30 A.M. (before
noon) and returns at 5:30 P.M. (after noon). If it
takes him 30 minutes to get to his work and he takes
an hour off at noon, how many hours does he work?
4. A fruit dealer sold 18 dozen oranges at \$.30 a
dozen. How much did he receive for them?



5. A garden is 36 feet long and 27 feet wide. How
many yards of cement walk a yard wide will be required
to surround it? Be careful about the corners.
6. A boat makes a trip of 369 miles in 3 days. If
it travels the same number of miles each day, how
many miles does it travel in one day?
7. From a roll of carpet containing 72 yards, three
pieces each containing 19 yards were cut. How many
yards yet remained in the piece?
8. John went to bed at 9:00 P.M. and rose at 6:30
A.M. How many hours was he in bed?
9. Mr. Henry deposited \$44 in the bank on Monday,
\$68 on Tuesday and \$76 on Wednesday. On Thursday
he drew out \$63. How much had he then in the bank?

23

ORAL PROBLEMS

1. How much will 10 chickens cost at \$.25 each?
2. How much will 10 half-dollars amount to?
3. I have 10 twenty-dollar bills. How much money have I?
4. A woman bought 10 bushels of chicken feed at \$.80 a bushel. How much did she pay for it?
5. A fruit dealer paid \$.64 for one basket of peaches. How much did he pay for 10 baskets of equal size?
6. If it costs \$.31 a word for a cablegram from Indianapolis to London, how much will a message of 10 words cost?
7. How much will a dealer pay for 10 bicycles at \$38 each?
8. $10 \times \$2.25$; $10 \times \$2.50$; $10 \times \$25$. Continue.

24

WHAT I CAN LEARN BY MYSELF

(a) $2 \times 3 = 6$	(b) $3 \times 17 = 51$
$20 \times 3 = 60$	$30 \times 17 = 510$

1. 4×56	4. 4×36	7. 8×43
40×56	40×36	80×43
2. 3×69	5. 3×83	8. 9×24
30×69	30×83	90×24
3. 6×34	6. 4×48	9. 7×35
60×34	40×48	70×35

25

WHAT I CAN LEARN BY MYSELF

*Multiply:**Write*

47

34

1881411598*Think*

47

34

188 = 47 × 41410 = 47 × 301598 = 47 × 34

For such pupils as must be given help, use one color of chalk for 4 and 188, and another color for 3 and 141.

1.	2.	3.	4.	5.	6.	7.	8.
45	86	72	29	53	67	48	97
<u>34</u>	<u>23</u>	<u>43</u>	<u>34</u>	<u>45</u>	<u>34</u>	<u>24</u>	<u>14</u>
9.	10.	11.	12.	13.	14.	15.	16.
36	27	65	92	76	42	84	56
<u>14</u>	<u>23</u>	<u>41</u>	<u>34</u>	<u>42</u>	<u>31</u>	<u>12</u>	<u>24</u>

26

FOURTHS

1. See, mother has cut a custard pie. Into how many pieces has she cut it?
2. If she gives each of us 3 children one piece, how many pieces will be left for her? What part will she get?
3. What part of the pie shall we children get?
4. What part of the pie will two of us get?
5. $\frac{1}{2}$ of the pie = $\frac{2}{4}$ of the pie?



THE DONKEY AND THE SALT — *Written*

1. A lazy donkey was laden with salt. On one side he carried a sack containing 128 lb. (what does "lb." mean?) of salt and on the other side a sack containing 143 lb. How many pounds less in the first sack than in the second?
2. He walked very slowly going only 250 yards in 5 minutes. How far did he go in one minute?
3. When he came to the creek he lay down in the water. Before his master could get him up, nearly all of the salt was gone. There were just 9 lb. left in each sack. How many pounds went from each sack?
4. The master then took the donkey back to the seashore, where he filled the sacks with sponges. Now the donkey trotted gaily along, going 200 yards in a minute. How far now did he go in 5 minutes? How many times as far as he went when laden with the salt?
5. When he came to the creek again, he promptly lay down. The sponges immediately filled with water. One bag now weighed 246 lb. and the other 285 lb. What was the weight of this load?
6. Can you tell how much the salt in both bags weighed at first?
7. Can you tell how much heavier the water-soaked sponges were than the salt? What would you like to say to that donkey?
8. Make an original problem on *The Ant and the Grasshopper* or some other fable. Give us some fun.

28

DAILY FLASH PRACTICE

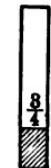
Add:

<u>29</u>	<u>46</u>	<u>36</u>	<u>97</u>	<u>75</u>	<u>98</u>	<u>28</u>
<u>5</u>	<u>7</u>	<u>8</u>	<u>7</u>	<u>9</u>	<u>4</u>	<u>6</u>

Subtract:

<u>54</u>	<u>61</u>	<u>84</u>	<u>52</u>	<u>34</u>	<u>43</u>	<u>24</u>
<u>9</u>	<u>8</u>	<u>6</u>	<u>5</u>	<u>7</u>	<u>6</u>	<u>8</u>

29*Complete and learn:*

$\frac{1}{4}$ of 4 = 1	$\frac{3}{4}$ of 4 = 3		
$\frac{1}{4}$ of 8 = 2	$\frac{3}{4}$ of 8 = 6		
$\frac{1}{4}$ of 12 = 3	$\frac{3}{4}$ of 12 = 9		
to	to		
$\frac{1}{4}$ of 48 = 12	$\frac{3}{4}$ of 48 = 36		

30

WRITTEN PROBLEMS

Solve problems 1, 2 and 9 in two ways.

1. Harris bought 4 chairs at \$17 each. He gave the clerk four \$20 bills. How much change did he receive?
2. How much do 4 bushels of corn weigh if 2 bushels weigh 112 pounds?
3. A family that uses 24 pounds of butter in 3 months will use how many pounds in 1 month at the same rate? In 4 months?
4. How many towels 2 feet long can be cut from a piece of crash 8 yards long?
5. What is the amount of Mrs. French's bill: \$37

for a stove; \$26.75 for a chair; \$36.75 for a table; and \$28.50 for a bed?

6. What is the cost of 4 dozen Panama hats at \$4.00 each?

7. What change did I receive from a two-dollar bill after buying a whisk broom for \$.45 and a feather duster for \$.95?

8. If a wagon costs \$75 and a horse twice as much, how much do both cost?

9. How much will 6 pounds of butter cost if 3 pounds cost \$1.80?

10. How many buttons at \$.03 each can be bought for \$.40? How much change?

11. A fruit dealer bought oranges at \$.40 a dozen and sold them at \$.04 each. How much did he make on 1 dozen? How much on 4 dozen?

12. My coal bill for four months this winter was as follows: November \$13.25; December and January \$21.50 for each month; February \$18.75. How much was the entire amount?

13. If there are 14 steps in my front stairs and I go up stairs 6 times during a morning, how many steps do I climb?

14. How many pickets in an iron fence 250 feet long, if the pickets are 4 inches apart? Be careful to place a picket at each end.

31

1. 10×5 cents =	$10 \times \$0.05$ =
2. 10×50 cents =	$10 \times \$0.50$ =
3. 10×3 cents =	$10 \times \$0.03$ =
4. 10×30 cents =	$10 \times \$0.30$ =
5. 10×7 cents =	$10 \times \$0.07$ =
6. 10×70 cents =	$10 \times \$0.70$ =

32

If Anna had 4 sticks of candy and divided them equally among 3 small boys, how much did each boy get?

Give each child a quantity of wooden toothpicks and ask him to illustrate problems like the foregoing until he is able to construct the table below.

Complete and learn:

$$\begin{array}{rcl} 3 \div 3 = 1 & & 6 \div 3 = 2 \\ 4 \div 3 = 1\frac{1}{3} & \text{to} & \\ 5 \div 3 = 1\frac{2}{3} & & 29 \div 3 = 9\frac{2}{3} \end{array}$$

38

ORAL PROBLEMS

1. Samuel carried the *News* to 25 customers each day. How many papers did he carry in 3 days? In 30 days?
2. Alice was absent 4 weeks from school. This was $\frac{1}{4}$ of the term. How long was the term?
3. How much did I pay for $4\frac{1}{2}$ feet of fringe at 30 cents a yard? Two ways.
4. There were 83 apples on our tree. How many will there be after 50 are picked off?
5. On one rose bush are 17 roses and on another are 13. How many roses on both bushes?
6. Harry has 6 cents after spending 25 cents for a reader. How much money had he at first?
7. If 2 yards of ribbon cost 18 cents, how much do 4 yards cost?
8. I paid \$.85 for a book. How much change did I get from a dollar bill?

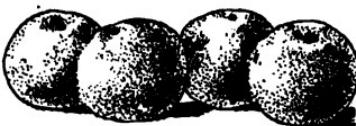
34

INTRODUCING RATIO

1. If 2 oranges cost 7 cents, how much will 4 oranges cost?



7 cents



? cents

2. If 2 melons cost 15 cents, how much will 6 melons cost?
3. If 3 pineapples cost 50 cents, how much will 9 pineapples cost?
4. Lemons at 3 for a dime are how much a dozen?
5. Five badges can be cut from a piece of ribbon 21 inches long. How many inches of ribbon will be needed for 20 badges of the same length?
6. A freight train travels 40 miles in 3 hours. At this rate how many miles will it travel in 6 hours?
7. At a sale, I bought 3 tubes of tooth paste for 50¢. How much would I have paid for one dozen tubes?
8. At the rate of 3 for 25¢, how much will I pay for one dozen packages of hair pins?
9. What is the price per dozen for skeins of floss at 4 for 25¢?
10. 2 apples cost 5¢.
6 apples cost ____.
11. 3 pads of paper cost 12¢.
10 pads of paper cost ____.
12. 3 marbles cost 8¢.
12 marbles cost ____.
13. 4 oranges cost 16¢.
9 oranges cost ____.
14. 5 lb. grapes cost 12¢.
15 lb. cost ____.
15. 3 bananas cost 6¢.
5 bananas cost ____.
16. 3 lb. sugar cost 30¢.
9 lb. sugar cost ____.
17. 6 hats cost \$12.
11 hats cost ____.

Have each example solved but one way: always, the easiest way.

35

DICTATION

1. $\frac{3}{4}$ of 16 + 3 =
2. $29 - 6 - 7 =$
3. If 1 Japanese fan cost 8 sen, how much will 4 fans cost?
4. Haru is 7 years old. Her age is $\frac{1}{2}$ of her mother's age. How old is her mother?
5. Haru's grandmother is 64 years old. How many years older is she than Haru?

36

$2433 \div 4$	$1689 \div 7$
$2070 \div 9$	$2057 \div 3$
$1971 \div 2$	$3363 \div 8$
$2423 \div 6$	$2159 \div 5$
$2693 \div 3$	$3631 \div 4$
$1714 \div 5$	$2045 \div 6$
$3160 \div 4$	$3214 \div 4$
$3870 \div 9$	$2128 \div 7$
$2187 \div 9$	$2592 \div 6$

37

Subtract:

1.	2.	3.	4.	5.
<u>6493</u>	<u>4074</u>	<u>3482</u>	<u>4154</u>	<u>9462</u>
<u>2646</u>	<u>1737</u>	<u>1843</u>	<u>1349</u>	<u>5726</u>
6.	7.	8.	9.	10.
<u>8470</u>	<u>6154</u>	<u>3284</u>	<u>3423</u>	<u>8698</u>
<u>2532</u>	<u>4448</u>	<u>1569</u>	<u>2615</u>	<u>3849</u>

38

CAMPING AT SPRING LAKE — *Written*

1. Last summer five of us boys went camping at Spring Lake. We rose at 5 A.M. and went to bed at 8:30 P.M. How many hours were we awake? How many hours did we sleep?
2. On the first day we caught 27 fish, on the second 36 fish, on the third only 14 fish, on the fourth 28 fish, and on the last day 15 fish. How many fish did we catch in all?
3. We sold 34 pounds of fish at the village at \$.08 a pound. How much did we get for the fish?
4. The grocer who bought the fish paid us with a five-dollar bill. How much change did we give him?
5. Mother made us 10 dozen cookies. How many was that for each of us?
6. Make another problem about a camping party.

39

THE MERRY-GO-ROUND

See Exercise 96, page 109. Draw an ellipse on the board. Write 32, 28, 8, 20, 16, 24, 12 and 36 in the circumference and $\frac{3}{4}$ in the center.

40

Add as in Exercise 93, page 54:

1.	2.	3.	4.	5.	6.	7.	8.
8	8	9	9	6	8	8	9
5	9	6	6	4	5	9	9
7	4	3	9	8	6	5	9
9	8	6	7	8	7	7	8
<u>45</u>	<u>63</u>	<u>58</u>	<u>27</u>	<u>58</u>	<u>85</u>	<u>67</u>	<u>75</u>

41

1. $12 \div 3$
 $12 \div 4$

3. $18 \div 3$
 $18 \div 6$

5. $24 \div 3$
 $24 \div 8$

$13 \div 3$
 $13 \div 4$

$19 \div 3$
 $19 \div 6$

$25 \div 3$
 $25 \div 8$

$14 \div 3$
 $14 \div 4$

$20 \div 3$
 $20 \div 6$

$26 \div 3$
 $26 \div 8$

2. $15 \div 3$
 $15 \div 5$

4. $21 \div 3$
 $21 \div 7$

6. $27 \div 3$
 $27 \div 9$

$16 \div 3$
 $16 \div 5$

$22 \div 3$
 $22 \div 7$

$28 \div 3$
 $28 \div 9$

$17 \div 3$
 $17 \div 5$

$23 \div 3$
 $23 \div 7$

$29 \div 3$
 $29 \div 9$

42

WRITTEN PROBLEMS

- If I pay \$4.50 for 3 yards of velvet, how much will I pay for 6 yards? Two ways.
- Two cities are 193 miles apart. How much is the railroad fare at 2 cents a mile?
- When eggs are 40 cents a dozen, how much will $2\frac{1}{2}$ dozen cost?
- A dealer paid \$184 for two cows. How much did he pay for the second cow if the first one cost him \$95?
- A candy merchant sold $4\frac{1}{2}$ pounds of candy to one customer and $1\frac{1}{2}$ pounds to another customer. How many pounds did he sell?

6. A boy had 37 postage stamps and needs 54. How many more must he buy?

7. * When ribbon is 9 cents a yard, how many yards can be bought for \$3.60?

8. How much change shall I receive from a two-dollar bill after buying 38 two-cent postage stamps?

9. I bought 24 pounds of 10-cent sugar and 4 bars of soap at 8 cents a bar. How much did I pay for them?

10. I own a farm of 45 acres. Two thirds of my farm are in garden and the rest in pasture. What part is pasture? How many acres are pasture? How many acres are in garden? Drawing.

11. If $\frac{1}{2}$ yard of silk costs \$.75, how much will $1\frac{1}{2}$ yards cost?

12. * The railroad fare from New York City to Albany is \$3.10 at the rate of 2 cents a mile. How many miles apart are these cities?

13. If there are 500 matches in a box, how many are there in 4 boxes?

* Have pupil discover if possible why the dividend and divisor must be of the same denomination. Change dividend to cents.

43

Multiply:

1.	2.	3.	4.	5.	6.
373	496	895	267	789	472
<u>24</u>	<u>32</u>	<u>43</u>	<u>34</u>	<u>21</u>	<u>43</u>

7.	8.	9.	10.	11.	12.
554	231	968	617	451	694
<u>23</u>	<u>19</u>	<u>42</u>	<u>34</u>	<u>53</u>	<u>32</u>

44

In writing numbers it is customary to divide the figures into groups of three, called "periods." The period to the right is called the "units period," and the one to the left of this "thousands period."

Thousands
Period
Units
Period
Period

67,569
6,934
500,050

Read and write in words:

8,940	17,917	10,001	5,500
25,206	108,008	101,100	500,005
406,200	76,076	10,010	50,050
698,986	807,087	100,100	505,005
583,469	785,869	110,011	550,050

Continue.

45

Add:

1.	2.	3.	4.	5.	6.
986	659	788	775	956	698
877	598	279	786	973	586
666	879	783	598	725	426
775	782	558	655	546	992
759	986	556	669	684	679
<u>254</u>	<u>127</u>	<u>248</u>	<u>550</u>	<u>193</u>	<u>345</u>

46

PLAYING STREET CAR



You may play street car. At five cents for each passenger, how much money does the conductor collect from 6 passengers? From 8 passengers? From 12 passengers?

Complete the following:

5 5 5 5 5 5 5 5 5	<i>Complete and learn:</i>
5 5 5 5 5 5 5 5 5	$1 \times 5 = 5$
5 5 5 5 5 5 5 5 5	$2 \times 5 = 10$
5 5 5 5 5 5 5 5 5	$3 \times 5 = 15$
5 5 5 5 5 5 5 5 5	to
<u>25</u> 5 5 5 5 5 5 5 5	$12 \times 5 = 60$
<u>30</u> 5 5 5 5 5 5 5 5	
?	
?	
?	
?	
?	
60	

47**DICTION**

1. $\frac{1}{2}$ of 32 + 3 =
2. Write in figures ten thousand one hundred.
3. Write 43 in Roman numerals.
4. If one tooth brush costs \$.30, how much will 10 cost?
5. If a theatre box holds 7 people for one performance, how many people can use it for 4 performances?

48**ORAL PROBLEMS**

1. Alice lives 8 blocks from school. If she goes home to lunch, how many blocks does she walk in going to and from school each day?
2. A train travels for 2 hours at the rate of 35 miles an hour. How many miles does it travel in all?
3. If 3 cows cost \$270, how much will 2 cows of the same value cost?
4. If 3 oranges cost 11 cents, how much will 6 oranges cost?
5. If a peck of potatoes costs \$.40, how much will a bushel cost?
6. How much will a yard and a half of cloth cost at \$.50 a yard?
7. How many inches in $\frac{1}{2}$ yard?
8. A family uses 3 pints of milk a day. How many quarts will they use in 6 days? How many gallons?
9. Add:

56	34	27	49	47	39
<u>28</u>	<u>49</u>	<u>56</u>	<u>25</u>	<u>57</u>	<u>59</u>

10. Subtract:
$$\begin{array}{r} 91 \\ - 27 \\ \hline \end{array}$$

$$\begin{array}{r} 84 \\ - 39 \\ \hline \end{array}$$

$$\begin{array}{r} 72 \\ - 57 \\ \hline \end{array}$$

$$\begin{array}{r} 64 \\ - 28 \\ \hline \end{array}$$

$$\begin{array}{r} 86 \\ - 58 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ - 17 \\ \hline \end{array}$$

11. Multiply:
$$\begin{array}{r} 34 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 98 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 98 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 76 \\ \times 3 \\ \hline \end{array}$$

12. Divide: $2\overline{)179}$ $5\overline{)167}$ $6\overline{)204}$ $3\overline{)224}$ $4\overline{)176}$

13. Show by a drawing on the board the difference between a surface containing 5 square inches and one 5-inch square.

14. Ethel picked 7 quarts of cherries which was 2 quarts more than Helen picked. How many quarts did they both pick?

15. A man rents a house for \$30 a month. How much does he pay a year? How much from May 1 to September 1?

49

1.	2.	3.	4.
$23 \div 7$	$19 \div 6$	$17 \div 5$	$20 \div 6$
$26 \div 6$	$14 \div 4$	$22 \div 3$	$16 \div 7$
$11 \div 3$	$17 \div 3$	$28 \div 9$	$25 \div 3$
$13 \div 4$	$25 \div 8$	$16 \div 3$	$22 \div 4$
$22 \div 7$	$28 \div 3$	$25 \div 4$	$15 \div 6$

50

DAILY FLASH PRACTICE

Multiply:

$$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$$

51

WHAT I CAN LEARN BY MYSELF

Subtract — units first:

<i>(a) Write</i>	<i>Think</i>	<i>(b) Write</i>	<i>Think</i>
100	90 + 10	800	700 + 90 + 10
36	30 + 6	36	30 + 6
<u>64</u>	<u>60 + 4</u>	<u>764</u>	<u>700 + 60 + 4</u>

1.	2.	3.	4.	5.	6.
100	100	100	100	100	100
<u>47</u>	<u>24</u>	<u>35</u>	<u>59</u>	<u>63</u>	<u>52</u>
7.	8.	9.	10.	11.	12.
300	200	500	600	300	400
<u>46</u>	<u>63</u>	<u>88</u>	<u>274</u>	<u>162</u>	<u>275</u>

52

WRITTEN PROBLEMS

1. A man owning a farm of 360 acres sold $\frac{1}{4}$ of it. How many acres were left? What part was left?
2. A milkman buys milk at \$.50 a gallon and sells it at 8 cents a pint. How much does he gain on 2 gallons? On 20 gallons?
3. My water bill for 4 months was as follows:
\$3.43; \$4.96; \$5.58 and \$3.43. Question?
4. If 4 tables cost \$84, how much will 8 tables cost?
5. One snowy morning Bob shoveled a path from the front gate to the front door which is 12 yards, then to the corner of the house which is 15 feet, then along the side of the house which is 21 yards and to the back door which is 15 feet. How long was the path?

6. In two months' time I have paid \$29.50 for repairs on my automobile. Of this I paid \$12.75 the first month. How much did I pay the second month?

7. How much will 3 gallons of olive oil cost at \$.60 a quart?

8. How many inches in $3\frac{1}{2}$ yards?

9. There are 16 elevators in a building. If each makes on the average 15 trips an hour, how many trips do they all make?

10. If each of these elevators carries on the average 20 passengers each trip, how many passengers are carried in an hour?

11. If 8 dozen eggs cost \$3.20, how much will 4 dozen cost? Two ways.

12. There are 17 windows in each side of a car. How many windows in 24 cars of the same kind?

13. I paid \$3.75 for 3 yards of silk. How much would I pay for 6 yards? Two ways.

14. In a three-story business block there are 96 windows. If there is the same number of windows in each story, how many windows in one story?

15. A man rides 84 miles a day on his wheel. How far can he go and return to the same place in 4 days?

16. A milk dealer bought 10 gallons of milk for \$5.00 and retailed it at 8 cents a pint. How much did he sell the milk for? How much did he gain?

17. A farmer cut $5\frac{1}{2}$ tons of hay on one farm and $4\frac{1}{2}$ tons on another. How much did he cut in all?

18. Mr. Anderson rented a house on March 3 and moved out of it on May 15. How many days did he have the house?

19. If 4 pounds of sugar cost \$.36, how much will 12 pounds cost at the same rate? Easiest way.

20. I paid \$.25 for sugar, \$.32 for coffee and \$.40 for tea. How much change did I get from a two-dollar bill?
21. If 24 books cost \$48, how much will 36 books cost? Solve in as many ways as possible.

53

Write in figures and add:

1. Ten thousand one hundred; one thousand one; one thousand one hundred.
2. Seventeen thousand seventeen; seventy thousand seventy; seven thousand seven.
3. One thousand nineteen; nineteen thousand one hundred; one thousand one hundred nineteen. Continue.

54**WHAT I CAN LEARN BY MYSELF**

Multiply:

	Proof or Check			Proof or Check	
(a)	3	4		(b)	24
	4	3			56
	<u>12</u>	<u>12</u>			<u>24</u>
					<u>144</u>
					<u>120</u>
					<u>112</u>
					<u>1344</u>

Prove or check each of your answers to the following in the same way:

1.	2.	3.	4.	5.	6.	7.	8.
36	27	84	98	76	78	64	39
<u>45</u>	<u>53</u>	<u>35</u>	<u>43</u>	<u>25</u>	<u>35</u>	<u>53</u>	<u>42</u>

55

Subtract

1.	2.	3.	4.	5.	6.
703	604	501	802	804	731
<u>146</u>	<u>257</u>	<u>358</u>	<u>569</u>	<u>399</u>	<u>472</u>
7.	8.	9.	10.	11.	12.
920	650	832	421	844	203
<u>345</u>	<u>374</u>	<u>537</u>	<u>395</u>	<u>576</u>	<u>156</u>

56

Complete and learn:

5	5	5	5	5	5
6	6	6	6	6	6

$$\begin{array}{l} 6 \times 5 = 30 \\ 5 \times 6 = 30 \end{array}$$

$$\begin{array}{l} 7 \times 5 = 35 \\ 5 \times 7 = 35 \end{array}$$

$$\begin{array}{l} \text{to} \\ 12 \times 5 = 60 \\ 5 \times 12 = 60 \end{array}$$

57

(a) *Write in words:*

1.	2.	3.	4.
50,500	109,019	116,160	707,007
505,005	190,009	160,016	700,700
550,050	909,090	660,060	770,070

(b) *Write in figures:*

1. Nineteen thousand nineteen; ninety thousand nine.
2. Nine hundred thousand nine; nine thousand nine hundred.
3. Nine hundred nine thousand; ninety thousand ninety.

SAMA, THE LITTLE BOY IN JAPAN — *Oral*

1. The fifth day of the fifth month is the Flag Festival for all the boys in Japan. What is the date?
2. In front of every boy's house floats a great paper fish. Sama counts 9 fish on his side of the street and 6 fish on the opposite side. Question?
3. Soon all the boys are playing in the street. Eight of them on stilts are chasing the others. How many are not on stilts?
4. The boys bring all their toy soldiers of which each boy in Japan has a great many. Altogether they have 150. Of these 70 have guns and the rest have swords. How many of the soldiers have swords?
5. In the afternoon the boys fly kites. After Sama's kite has gone up 110 feet he still has 40 feet of string on his reel. How long is the string?
6. At night the boys shoot skyrockets with 15 stars in each. Each rocket has stars of two colors. You may tell all the possible ways to combine the stars so as to make 15; as 9 stars + 6 stars = 15 stars.

59*Divide:***1.**

$$7 \overline{)2317}$$

2.

$$6 \overline{)1934}$$

3.

$$8 \overline{)2657}$$

4.

$$9 \overline{)2894}$$

5.

$$5 \overline{)1768}$$

6.

$$6 \overline{)1944}$$

7.

$$9 \overline{)2908}$$

8.

$$5 \overline{)1263}$$

9.

$$7 \overline{)2263}$$

10.

$$8 \overline{)2586}$$

60

1. What number is $\frac{1}{2}$ of 18?
2. Eighteen is $\frac{1}{3}$ of what number?
3. What number is $\frac{1}{3}$ of 21?
4. Twenty-one is $\frac{1}{3}$ of what number?
5. What number is $\frac{1}{4}$ of 8?
6. Eight is $\frac{1}{4}$ of what number?
7. What number is $\frac{1}{4}$ of 12?
8. Twelve is $\frac{1}{4}$ of what number?
9. What is $\frac{1}{3}$ of 6?
10. Six is $\frac{1}{3}$ of what number?
11. What is $\frac{1}{3}$ of 12?
12. Twelve is $\frac{1}{3}$ of what number?
13. What is $\frac{1}{4}$ of 16?
14. Sixteen is $\frac{1}{4}$ of what number?

Continue.

61*Complete and learn:*

$$5 \div 5 = 1$$

$$10 \div 5 = 2$$

to

$$60 \div 5 = 12$$

$$5 \div 1 = 5$$

$$10 \div 2 = 5$$

to

$$60 \div 12 = 5$$

62

Make six original problems about Thanksgiving Day, using:

1. Dollars and cents.
2. Quarts of cider and pounds of nuts.
3. Length of table to seat your guests.
4. Knives, forks and spoons by the dozen.
5. Time at which company arrives and departs.
6. Material entirely your own.

63**WRITTEN PROBLEMS**

1: A woman paid \$.48 for 2 yards of dress goods. How much would she pay for 6 yards at the same rate? Two ways.

2. How many inches in $1\frac{3}{4}$ yards? In $1\frac{3}{4}$ yards?
3. A piece of ground is 100 feet long and 20 feet wide. How many yards of fencing will be required to inclose it?
4. If 3 quarts of molasses cost \$1.20, how much must be paid for a gallon?
5. Dan hires a row boat at \$.30 an hour. How much must he pay for it, if he keeps it $7\frac{1}{2}$ hours?
6. Alice multiplied a number by 6 and her answer was 246. What was the number?
7. A farmer had 2 bins of wheat each containing 338 bushels. How many bushels did he have after selling 256 bushels?
8. How many pints are there in $2\frac{3}{4}$ gallons?
9. If $\frac{1}{2}$ pound of candy costs \$.24, how much must I pay for 5 pounds?
10. Sold $3\frac{3}{4}$ pounds of butter to one customer and

$1\frac{1}{4}$ pounds to another. How many pounds did I sell to both? How much did I get for the butter at \$.62 a pound?

11. Alfred is 15 years 7 months old and Bessie is 9 years old. How much older is Alfred than Bessie?

12. A milk can holds 8 gallons. If there are 24 quarts of milk in it, how much more milk will it hold?

13. Mrs. Myers had $5\frac{3}{4}$ yards of French gingham from which she cut $2\frac{1}{4}$ yards to make a dress for Louise. How many yards were left in the piece?

14. A brick wall which contained 288 bricks was 12 layers high. How many bricks in each layer? Each brick is 8 inches long. How many inches long is the wall? How many feet long?

64

Multiply:

1.	2.	3.	4.	5.	6.
<u>342</u>	<u>976</u>	<u>235</u>	<u>879</u>	<u>654</u>	<u>467</u>
<u>98</u>	<u>34</u>	<u>76</u>	<u>43</u>	<u>42</u>	<u>35</u>

7.	8.	9.	10.	11.	12.
<u>241</u>	<u>890</u>	<u>204</u>	<u>678</u>	<u>756</u>	<u>857</u>
<u>94</u>	<u>24</u>	<u>75</u>	<u>32</u>	<u>23</u>	<u>54</u>

65

Divide:

1.	2.	3.	4.	5.
<u>7)</u> <u>1624</u>	<u>9)</u> <u>2079</u>	<u>6)</u> <u>1939</u>	<u>5)</u> <u>2627</u>	<u>8)</u> <u>3379</u>
6.	7.	8.	9.	10.
<u>9)</u> <u>2892</u>	<u>7)</u> <u>1625</u>	<u>5)</u> <u>1728</u>	<u>8)</u> <u>1858</u>	<u>6)</u> <u>1455</u>

66**DAILY FLASH PRACTICE**

Supply the missing number:

8	6	9	7	4	6	5	7
15	14	15	12	11	15	14	15

67**DICTION**

1. $\frac{2}{3}$ of 27 + 5 =
2. $10 \times \$.75 =$
3. If 2 yards of ribbon cost \$.25, how much will 4 yards cost?
4. Write in figures one dollar five cents.
5. How many square inches in a three-inch square?

Drawing.

68**ORAL PROBLEMS**

1. Eleven of us went to the Art Institute with Miss James. She bought twenty-five street-car tickets for which she paid a dollar. How many tickets did the conductor return to her after taking out all our fares? How many tickets had she left after paying for our return trip?
2. If 3 hats cost \$24, how much will 2 cost?
3. How much will 3 pairs of shoes cost at \$3.50 a pair?
4. Ethel picked 9 quarts of cherries, which was 1 gallon more than Mary picked. How many quarts did they both pick?

5. Divide 32 marbles equally among 4 boys.
6. A milkman has 3 gallons of milk in his can and sells 10 quarts. How many quarts has he left?
7. A building is 40 feet high. The lower story is 15 feet high. How high is the building above the lower story?
8. If there are 15 problems on a page and you solve 9 of them, how many do you not solve?
9. What number must be added to 29 to make 44?
10. If you weighed 73 pounds last year and now weigh 85 pounds, how much have you gained?
11. I bought an overcoat for \$38 and gave a \$50 bill. How much change did I get?
12. Ralph's kite string is 93 feet long. How many yards in it?
13. A boy picks 21 quarts of cherries and sells 5 quarts. How many gallons has he left?
14. What number must be subtracted from 34 to leave 25?
15. If there are 26 pupils in one class and 28 in another, how many pupils are in both classes?
16. What number multiplied by 4 makes 328?

69*Subtract:*

<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>4.</u>	<u>5.</u>
3074	5231	6341	7254	3045
<u>1569</u>	<u>3147</u>	<u>2543</u>	<u>2398</u>	<u>1267</u>
<u>6.</u>	<u>7.</u>	<u>8.</u>	<u>9.</u>	<u>10.</u>
5523	7530	4054	7431	4563
<u>2595</u>	<u>4698</u>	<u>3196</u>	<u>6529</u>	<u>1959</u>

70

1.	2.	3.	4.
5×9	7×5	$30 \div 6$	$40 \div 5$
$35 \div 5$	$40 \div 8$	9×5	5×7
5×8	6×5	$35 \div 7$	$45 \div 9$
$30 \div 5$	$45 \div 5$	8×5	5×6

71*Add at sight:*

1.	2.	3.	4.	5.	6.	7.	8.
38	76	27	59	78	46	37	57
<u>7</u>	<u>9</u>	<u>8</u>	<u>6</u>	<u>7</u>	<u>9</u>	<u>7</u>	<u>6</u>
9.	10.	11.	12.	13.	14.	15.	16.
64	95	83	72	95	53	84	67
<u>70</u>	<u>60</u>	<u>50</u>	<u>80</u>	<u>30</u>	<u>90</u>	<u>70</u>	<u>80</u>

72

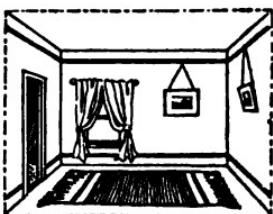
- | | |
|-------------------------------------|-------------------------------|
| 1. $\frac{1}{4}$ of 28 + 3 = | 6. $3 \times 6 + 8 =$ |
| 2. $\frac{2}{3}$ of 21 + 4 = | 7. $4 \times 8 + 6 =$ |
| 3. $\frac{2}{3}$ of 18 + 5 = | 8. $3 \times 9 + 5 =$ |
| 4. $\frac{3}{2}$ of 24 + 7 = | 9. $4 \times 7 + 9 =$ |
| 5. $\frac{3}{2}$ of 15 + 3 = | 10. $4 \times 9 + 5 =$ |

73**THE MUSHPOT**

The children stand in a circle about another child who is in the Mushpot. This child is to add or subtract 6 (or any other digit) to or from the numbers given by the children in the ring. Each child in the ring selects some difficult combinations for the child in the center as "68 + 6," or "45 - 6." If the child in the center answers correctly, he goes into the circle while the questioner goes into the Mushpot.

74

WRITTEN PROBLEMS



1. A rug is bought for a room which is 9 feet by 12 feet. If the edge of the rug is everywhere one foot from the wall, how long and how wide is the rug?
2. If 3 barrels of flour cost \$36, how much will 12 barrels cost?
3. How much must I pay for 4 pounds of coffee at \$.32 and $\frac{1}{2}$ pound of tea at \$.60?
4. A grocer puts up 9 pounds of starch into 3 packages which he sells at 8 cents a pound. How much does he get for each package?
5. At \$.15 a yard how many yards of bunting can be bought for \$1.50?
6. Albert had \$.70 and spent $\frac{3}{10}$ of his money for marbles. How much money had he left? Divide a line into 10 parts to show how he divided his money; the part he spent and the part he had left.
7. Two hundred thirty pounds of prunes were packed in 5 boxes of equal size. How many pounds were in each box?
8. If 6 chairs cost \$30, how much will 18 chairs cost? Two ways.
9. A jug contains 3 gallons 2 quarts of cider. How many pint glasses can be filled from the jug?
10. If a boy picks 38 quarts of berries in 2 days, how many quarts can he pick in 4 days at the same rate? Two ways.
11. If my hens lay 6 eggs a day, how many will they lay in a week? How much are the eggs worth at \$.50 a dozen?

12. A piece of rope is 90 feet long. How many yards in $\frac{1}{2}$ of it?

13. My kitchen is 12 feet wide and 15 feet long. How many square yards of linoleum must I buy to cover it? Drawing.

14. A milkman put $14\frac{3}{4}$ gallons of milk into pint bottles. How many bottles did he use?

15. A sofa pillow is 2 feet wide and 3 feet long. How many yards of cretonne a yard wide will be needed to make 6 pillows of the same size? Drawing.

75

ROMAN NUMERALS

In writing Roman numerals you already know that:
 $1 = I$; $5 = V$; $10 = X$. You need further to know that: $50 = L$; $100 = C$.

Complete and learn:

$$\begin{array}{ll} 1 = I \\ 2 = II \\ \text{to} \\ 10 = X \end{array}$$

$$\begin{array}{ll} 10 = X \\ 20 = XX \\ \text{to} \\ 100 = C \end{array}$$

76

Add — see Exercise 93, page 54:

1.	2.	3.	4.	5.	6.	7.	8.
7	8	9	9	9	8	9	8
2	6	8	5	5	5	7	6
8	4	4	5	7	9	5	5
9	8	9	6	2	8	7	8
9	6	8	8	8	6	8	7
<u>46</u>	<u>67</u>	<u>75</u>	<u>98</u>	<u>87</u>	<u>59</u>	<u>86</u>	<u>78</u>

77

1.	2.	3.	4.	5.
7)2275	8)2600	6)2550	9)2089	5)1518
6.	7.	8.	9.	10.
6)2412	7)2184	8)9640	5)2706	9)2907

78

A GARDEN FARM

Potatoes
Cabbage
Corn
Oats
Wheat

In Europe and in some parts of our country, farms are kept like gardens. The ground is divided into strips and planted with different crops

as in the drawing. What part of this farm is in wheat? What part is in wheat and oats? In what is the remaining $\frac{2}{5}$ of the farm planted? If this farm contains 25 acres, how many acres in $\frac{2}{5}$ of the farm? In $\frac{4}{5}$ of the farm?

79

ORAL PROBLEMS

- At 9 cents a pound, how much shall I pay for 5 pounds of raisins?
- If 5 peaches are worth a dime, how much are 7 peaches worth?
- A hen had 15 pretty chickens. A hawk carried off 6 of them. How many had she left?
- Bennie is 15 years old and Dan is $\frac{1}{3}$ as old. How old is Dan?

5. Two boys were going to ride 13 miles on their wheels. When they had gone 7 miles they stopped for lunch. How many more miles had they to go?

6. Mary has a flower bed 5 feet long and 4 feet wide. How many square feet does it contain? Make a drawing.

7. If a quarter of a pie was sold for 8 cents, how much was $\frac{3}{4}$ of it worth?

8. If a pound of beef costs 40 cents, how much will $3\frac{1}{2}$ pounds cost?

9. A man owning a farm of 280 acres, sold $\frac{1}{4}$ of it. How many acres were left? What part of his farm was left?

80

FIFTHS

Complete and learn:

$$\frac{1}{5} \text{ of } 5 = 1 \quad \text{to} \quad \frac{4}{5} \text{ of } 5 = 4$$

$$\frac{1}{5} \text{ of } 10 = 2$$

$$\frac{1}{5} \text{ of } 15 = 3$$

to

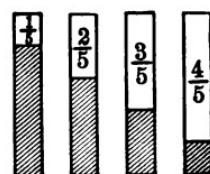
$$\frac{1}{5} \text{ of } 60 = 12$$

$$\frac{1}{5} \text{ of } 10 = 8$$

$$\frac{1}{5} \text{ of } 15 = 12$$

to

$$\frac{1}{5} \text{ of } 60 = 48$$



81

Add:

1.

2.

3.

4.

5.

6.

699

978

867

778

478

887

995

866

882

935

796

769

787

584

678

769

245

659

932

668

469

358

979

538

798

676

789

686

767

649

317

357

436

629

458

549

82

Multiply:

1.	2.	3.	4.	5.	6.
354	897	545	796	235	846
<u>96</u>	<u>45</u>	<u>89</u>	<u>54</u>	<u>97</u>	<u>53</u>

7.	8.	9.	10.	11.	12.
453	534	867	678	785	234
<u>69</u>	<u>76</u>	<u>43</u>	<u>34</u>	<u>42</u>	<u>79</u>

83

WRITTEN PROBLEMS

1. A jar contains 5 gal. 3 qt. of buttermilk. How many pint glasses can be filled from it?
2. From a piece of goods $65\frac{3}{4}$ yards long, 9 yards were cut. How many yards remained in the piece?
3. If a boy picks 38 quarts of berries in 2 days, how many quarts will he pick in 3 days at the same rate?
4. If my hens average 35 eggs a day, how many dozen will they lay in three weeks?
5. How many yards in $\frac{1}{2}$ of 22 feet?
6. My bathroom is 9 feet wide and 12 feet long. How many square yards of linoleum will be required to cover it? Drawing.
7. There are 732 books in a certain bookstore in four cases, each containing the same number of books. How many books are in three of the cases?
8. Mother made 72 glasses of jelly. Two thirds of these were crabapple and the remainder were raspberry. How many glasses of crabapple were there? Two ways.

9. Mr. Hopkins had 746 acres of land divided into three farms. In the first farm were 145 acres, and in the second were 179 acres. How many acres in the third farm?
10. Mr. Stevenson paid \$156 for a horse. This was \$74 more than he paid for his carriage. How much did he pay for both?
11. My vegetable garden is 36 feet long and 27 feet wide. How many yards of fencing will I need for it?
12. A doll was sold at Christmas for \$6.00. The doll before it was dressed cost \$.98, its dress, \$1.37, its hat and shoes, \$.75. How much was the whole cost? The gain?
13. A farmer who owned 60 pigs sold $\frac{1}{3}$ of them. How many pigs did he sell? How many did he keep?
14. If he received \$15 for each of the pigs that he sold, how much did he receive in all?
15. If he sells 4 cows for \$360, how much should he receive for 5 cows at the same rate?
16. A man who owns 60 pigs has $\frac{1}{2}$ as many as his neighbor. How many pigs does the neighbor own? Compare with problem 13.
17. Mr. Jones bought a horse for \$150 and a cow for which he paid $\frac{2}{3}$ as much. How much did he pay for both?
18. A music teacher buys a piano for \$750 and pays \$550 cash. How long will it take him to pay the remainder at \$10 a month?
19. A merchant had 560 yards of woolen goods. After selling $\frac{2}{5}$ of it, how many yards had he left?

20. A train left New York for Philadelphia with 356 passengers. At Newark 89 left the train and 87 got on. At New Brunswick 98 left the train and 96 got on. How many were then on the train? Solve this problem without a pencil.

21. Abraham Lincoln was born in 1809. He freed the slaves in 1863. How old was he at that time?

22. If I buy $2\frac{1}{4}$ pounds of steak at 40 cents a pound, how much change do I get from a dollar?

23. If 3 tables cost \$72, how much must I pay for a dozen similar tables?

24. A boy gained 29 cents on some papers that had cost him 76 cents. For how much did he sell the papers?

84

THE MERRY-GO-ROUND

Draw an ellipse. Write 10, 45, 15, 40, 25, 30, 55, 20, 35 and 60 in the circumference and $\frac{1}{2}$ in the center. See Exercise 96, page 109.

85

1. $\frac{3}{4}$ of 16 \div 5 =	6. 29 + 6 - 8 =
2. $\frac{1}{2}$ of 18 \div 7 =	7. 35 - 7 + 8 =
3. $\frac{2}{3}$ of 60 \div 9 =	8. 56 + 9 - 8 =
4. $\frac{2}{3}$ of 18 \div 7 =	9. 68 + 7 - 9 =
5. $\frac{1}{3}$ of 33 \div 8 =	10. 45 - 9 + 8 =

86

Complete and learn:

$4 \div 4 = 1$	$8 \div 4 = 2$
$5 \div 4 = 1\frac{1}{4}$	$9 \div 4 = 2\frac{1}{4}$
$6 \div 4 = 1\frac{2}{4}$	to
$7 \div 4 = 1\frac{3}{4}$	$39 \div 4 = 9\frac{3}{4}$

87

1.	2.	3.	4.	5.
$9\overline{)3629}$	$8\overline{)2443}$	$5\overline{)2547}$	$6\overline{)3021}$	$7\overline{)2954}$
6.	7.	8.	9.	10.
$5\overline{)3275}$	$7\overline{)1757}$	$5\overline{)4259}$	$9\overline{)3910}$	$8\overline{)1713}$

88

TERMS IN ADDITION
 27 is an *addend*.
 $\underline{+ 35}$ is an *addend*.
 62 is the *sum*.

1. If you add upward and then downward, should you get the same answer each time? Illustrate with an example.
2. If a column in addition is broken into several sections and the sum of each section is obtained, how can you get the sum of the original column from these sums? Illustrate.

89

DICTATION

1. Write in figures fifty thousand five.
2. $\frac{1}{3}$ of 24 + 5 = ?
3. How many quarts in 3 pecks of apples?
4. How much must I pay for a half-pint of cream at \$.60 a quart?
5. A man walks 4 miles an hour for 3 hours and walks back in 6 hours. How many miles an hour does he walk on the return trip?

ORAL PROBLEMS

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. How much will 3 dozen lemons cost at \$.40 a dozen?
2. If 7 loaves of bread cost \$.70, how much will 6 loaves cost?
3. A pole 16 feet long is standing in 4 feet of water. How many feet are in the air? What part of the pole is in the water? What part is in the air?
4. I cut 3 apples into quarters. How many pieces did I make?
5. There are 25 lines on a page and on the average 10 words to the line. How many words on the page?
6. Horace took 19 pictures with his kodak and Bertha 16 with hers. How many pictures did they both take?
7. May received a box of chocolates for her birthday. There were 4 layers of candies and 40 candies in a layer. How many chocolates in the whole box?
8. A laundress washed 60 handkerchiefs for 5 persons. If each had the same number of handkerchiefs, how many did she wash for each?
9. There are 5 ribbons of iron in the iron fencing across the back of my 70-foot lot. How many feet of ribbon are there?
10. There are 87 blooms and 8 buds in my pansy bed. When the buds open, how many blooms shall I have?
11. The fare on the railroad to a certain town is \$.60. A round-trip ticket costs \$1.15. How much is saved by buying a round-trip ticket?



12. Add 14 feet and 17 feet; 28 pounds and 15 pounds; \$16 and \$19.
13. I have 28 rose bushes and buy half a dozen more. How many have I now?
14. At 2 cents a mile, how many miles can you travel for 17 cents?
15. I bought 1 gallon of milk for 25 cents and sold it at 8 cents a quart. How much did I gain?

91

TERMS IN SUBTRACTION
 8065 is the *minuend*.
1278 is the *subtrahend*.
6787 is the *difference*.

1. If you are given the *minuend* and the *subtrahend*, how can you find the *difference*? Illustrate with an example.
2. If you are given the *minuend* and the *difference*, how can you find the *subtrahend*? Illustrate.
3. If you are given the *subtrahend* and the *difference*, how can you find the *minuend*? Illustrate.

92

Read:

L	C	LXX	XLIX	CIV
LX	CX	CXX	XCIV	LIX
XL	XC	XCV	LXVI	XCVI

Write in Roman numerals:

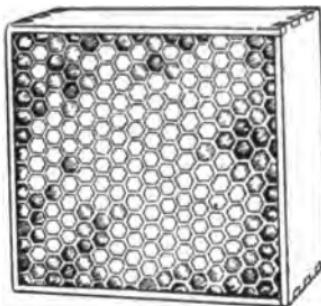
- | | |
|----------------------|---------------------|
| (a) 40; 90; 25; 52. | (c) 57; 48; 92; 65. |
| (b) 60; 110; 66; 33. | (d) 49; 94; 37; 86. |

93

IN A HONEYCOMB

Did you ever look closely at the honeycomb of a bee? Each tiny cell has 6 sides. How many sides have 6 cells? 8 cells? 12 cells?

Complete:



*Make the Table of Sixes
and learn it.*

94

A RATIO TABLE

Complete and learn:

$$(a) 2 \times 6 = 12$$

$$4 \times 6 = 2 \times 12 = ?$$

$$6 \times 6 = 3 \times 12 = ?$$

$$(b) 3 \times 6 = 18$$

$$6 \times 6 = 2 \times 18 = ?$$

$$9 \times 6 = ? \times 18 = ?$$

In similar manner make a table for 4, 8 and 12 times 6; for 5 and 10 times 6.

95*Multiply:*

$$\begin{array}{r} 1. \\ 976 \\ \underline{54} \end{array}$$

$$\begin{array}{r} 2. \\ 453 \\ \underline{89} \end{array}$$

$$\begin{array}{r} 3. \\ 687 \\ \underline{45} \end{array}$$

$$\begin{array}{r} 4. \\ 345 \\ \underline{98} \end{array}$$

$$\begin{array}{r} 5. \\ 472 \\ \underline{53} \end{array}$$

$$\begin{array}{r} 6. \\ 987 \\ \underline{34} \end{array}$$

$$\begin{array}{r} 7. \\ 675 \\ \underline{53} \end{array}$$

$$\begin{array}{r} 8. \\ 354 \\ \underline{96} \end{array}$$

$$\begin{array}{r} 9. \\ 698 \\ \underline{43} \end{array}$$

$$\begin{array}{r} 10. \\ 742 \\ \underline{53} \end{array}$$

96

$$\begin{array}{r} 1. \\ 7\overline{)3524} \end{array}$$

$$\begin{array}{r} 2. \\ 9\overline{)4523} \end{array}$$

$$\begin{array}{r} 3. \\ 6\overline{)2705} \end{array}$$

$$\begin{array}{r} 4. \\ 6\overline{)3946} \end{array}$$

$$\begin{array}{r} 5. \\ 8\overline{)2837} \end{array}$$

$$\begin{array}{r} 6. \\ 9\overline{)3607} \end{array}$$

$$\begin{array}{r} 7. \\ 7\overline{)3786} \end{array}$$

$$\begin{array}{r} 8. \\ 5\overline{)4894} \end{array}$$

$$\begin{array}{r} 9. \\ 8\overline{)3645} \end{array}$$

$$\begin{array}{r} 10. \\ 6\overline{)3005} \end{array}$$

$$\begin{array}{r} 11. \\ 3\overline{)2090} \end{array}$$

$$\begin{array}{r} 12. \\ 7\overline{)2495} \end{array}$$

$$\begin{array}{r} 13. \\ 4\overline{)3190} \end{array}$$

$$\begin{array}{r} 14. \\ 8\overline{)3470} \end{array}$$

$$\begin{array}{r} 15. \\ 9\overline{)4876} \end{array}$$

97*Add upward:*

$$\begin{array}{r} 1. \\ 679 \\ 538 \\ 864 \\ 748 \\ 892 \\ 687 \\ 356 \\ \underline{479} \end{array}$$

$$\begin{array}{r} 2. \\ 998 \\ 796 \\ 748 \\ 785 \\ 693 \\ 575 \\ 859 \\ \underline{979} \end{array}$$

$$\begin{array}{r} 3. \\ 785 \\ 754 \\ 898 \\ 999 \\ 592 \\ 838 \\ 778 \\ \underline{898} \end{array}$$

$$\begin{array}{r} 4. \\ 989 \\ 897 \\ 589 \\ 968 \\ 756 \\ 469 \\ 674 \\ \underline{958} \end{array}$$

$$\begin{array}{r} 5. \\ 777 \\ 986 \\ 778 \\ 754 \\ 869 \\ 587 \\ 759 \\ \underline{986} \end{array}$$

$$\begin{array}{r} 6. \\ 686 \\ 465 \\ 938 \\ 167 \\ 757 \\ 576 \\ 948 \\ \underline{677} \end{array}$$

98

DAILY FLASH PRACTICE

$$\begin{array}{r}
 8 & 16 & 7 & 16 & 9 & 14 & 8 & 13 \\
 + 8 & - 9 & + 5 & - 8 & + 6 & - 7 & + 5 & - 6 \\
 \hline
 7 & 15 & 8 & 14 & 8 & 16 & 9 & 13 \\
 + 9 & - 7 & + 6 & - 6 & + 7 & - 7 & + 7 & - 7 \\
 \hline
 \end{array}$$

99

Complete and learn:

6	6	6	6	6	6	6
7	7	7	7	7	7	7

$$\begin{array}{r}
 7 \times 6 = 42 \\
 6 \times 7 = 42 \\
 \text{to} \\
 12 \times 6 = 72 \\
 6 \times 12 = 72
 \end{array}$$

100

WRITTEN PROBLEMS

1. By selling a horse for \$196 I lost \$59. How much did the horse cost me?
2. George Washington died in 1799 at the age of 67. In what year was he born? How old was he in 1776?
3. How old is a boy in 1921 who was born in 1909?
4. A farmer bought a cow for \$90 and some sheep for $\frac{1}{2}$ as much money. How much did he pay for the sheep?
5. A grocer sold 3 bushels of dried beans at 6 cents a quart. How much did he receive for them?
6. My flower bed is 45 feet long and $\frac{2}{3}$ as wide. How many feet around it? Drawing.
7. How many square feet in my flower bed?

8. How much denim a yard wide will it take to cover 6 porch cushions that are 17 inches square? Allow one inch for turning in.

9. A certain school bought 10 gallons of ice cream at \$1.50 a gallon. The cream was cut into 360 small cakes and sold at 5 cents a cake. How much profit did the school make?

10. How many cards 3 inches wide and 4 inches long can be cut from a piece 16 inches wide and 24 inches long? Two ways.

11. If a housekeeper puts 14 half-peaches into each quart can, how many peaches will she require for 2 dozen cans?

12. A man bought a cow for \$100 and sold it for \$125. How much was the gain? What part of the cost was gained?

13. In a certain school are 278 girls, which is 87 less than the number of boys. How many pupils in the school?

14. A boy had $6\frac{1}{2}$ dozen eggs and sold $\frac{1}{2}$ of them. How many eggs had he left? How many dozen eggs?

15. A man sold a house for \$3675 losing \$325. How much had the house cost him?

16. If a man saves \$75 a month, how many years will it take him to save enough to buy an \$800 lot and build a house costing \$2800?

101

Find the difference:

Minuend	Subtrahend	Minuend	Subtrahend
1. 5665	3789	5. 7653	4987
2. 9032	8576	6. 4545	2789
3. 6325	4986	7. 6735	5989
4. 5430	5347	8. 8654	4678

102

Add upward:

1.	2.	3.	4.
686	888	975	766
795	996	897	954
969	747	689	787
778	399	468	795
885	688	796	677
469	772	675	769
957	956	746	498
<u>876</u>	<u>789</u>	<u>978</u>	<u>887</u>

103

TERMS IN MULTIPLICATION

403 is the *multiplicand*.27 is the *multiplier*.282180610881 is the *product*.*Find the product:*

Multiplicand	Multiplier	Multiplicand	Multiplier
1. 658	46	5. 730	65
2. 897	65	6. 564	89
3. 437	34	7. 289	56
4. 243	97	8. 564	64

If the *multiplicand* and the *multiplier* are interchanged in a problem, does it change the *product*? Illustrate. See Exercise 54, page 139.

104**AT THE PARK — Written**

1. On Monday 535 people were at the park. This was 57 more than there were on Tuesday. How many people were at the park on Tuesday?
2. Of the 535 people at the park on Monday, 389 were children. How many grown people were there?
3. Saturday afternoon there were 189 men at the park. This was $\frac{1}{2}$ of the number of children there. How many children were at the park Saturday afternoon?
4. Boats rent for \$.50 an hour. How much did each of two boys pay who rented a boat at 11:30 A.M. and returned it at 4:30 P.M.?
5. The bear-pit is 96 feet long and 20 feet wide. How many square feet have the bears in which to exercise?
6. In two days last week the merry-go-round made \$20. If each person who rode paid 5 cents, how many passengers were there?
7. A caddy on the golf links made \$.65 on Monday; \$.85 on Tuesday; \$.75 on Wednesday; \$.45 on Thursday; \$.85 on Friday and \$.75 on Saturday. How much did he make the entire week?
8. On Saturday 250 bags of peanuts were sold at 5 cents a bag. How much was received for them?
9. The pony track is a quarter of a mile or 1320 feet long. How many times round the track did a boy ride who rode 2 miles?
10. At the Pure Milk Station 40 gallons of milk were sold for sick babies at 6 cents a pint. How much money was received for milk?

TEST PAGE I

This page and the one following contain types of exercises which the class should do readily before proceeding to more difficult work. A class percentage of not less than eighty should be required.

These pages can also be used in September for classes about to take up the Intermediate Arithmetic, as a means of revealing weaknesses that have developed during the summer vacation.

I

Write answers only:

1. Write in figures three thousand three; in Roman numerals 49.
2. Write in words: 5560.
3. Write in figures two dollars ten cents.
4. If 2 yards of ribbon cost 35¢, how much will 4 yards cost?
5. Alvin has a flower bed 6 feet long and 3 feet wide. How many square feet in it?

II

Show all work — time limit 25 minutes:

1. At 15¢ a yard how many yards of muslin can be bought for \$3.00?
2. When eggs are 40¢ a dozen, how much will $1\frac{1}{4}$ dozen cost?
3. A man owning a farm of 240 acres sold $\frac{3}{4}$ of it. What part was left? How many acres?
4. A milk dealer bought 15 gal. of milk for \$6.00 and retailed it at 15¢ a quart. What was the selling price?
5. Miss Noyes had $6\frac{3}{4}$ yards of French gingham from which she cut $2\frac{1}{4}$ yards to make a dress for Elsa. How many yards were left in the piece?

TEST PAGE II

III

Oral Problems

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. I cut 5 apples into quarters. How many pieces did I make?
2. There are 28 lines on a page and on the average 10 words to the line. How many words on the page?
3. A piece of rope is 30 yards long. How many feet in $\frac{1}{2}$ of it?
4. How many yards of cretonne one yard wide will be needed to cover 5 sofa pillows, 3 feet square?
5. If 3 bbl. of flour cost \$36, how much will 6 bbl. cost?

IV

Write at dictation:

1. Add: 865; 936; 855; 854; 568; 267; 687. (Two minutes)
2. Find the difference between 6783 and 7541. (One minute)
3. Multiply 241 by 83. (Three minutes)
4. Divide 3078 by 9. (Three minutes)

V

Each child one (oral):

- | | | |
|------------------------|------------------------|------------------------|
| 1. $\frac{3}{4}$ of 12 | 4. $\frac{2}{3}$ of 18 | 7. $\frac{2}{5}$ of 20 |
| 2. $84 - 7$ | 5. $73 - 9$ | 8. $52 - 8$ |
| 3. $29 \div 8$ | 6. $32 \div 7$ | 9. $31 \div 9$ |

PART II — SECTION TWO

1

AN AUTOMOBILE TRIP IN FRANCE — *Oral*

1. What fine roads! It is 8 A.M., and we shall ride until noon. We can easily make 40 miles an hour, which will bring us to Domremy, — miles away.
2. Half-way to Domremy is a beautiful old castle where we shall stop to rest. After riding — miles this will be pleasant.
3. This old castle was built in —, which is just four hundred years ago.
4. As we fly along the road, we pass a group of 7 red-roofed cottages. The group we are approaching has 9 red roofs. We can see — red roofs shining in the sun!
5. Back of the cottages is a field of cabbage. There are 20 rows with 80 cabbages in each row. There are — cabbages in the field.

6. We have passed two shepherds driving their flocks to market. The first shepherd told us he had 70 sheep in his flock. This flock had 20 sheep less in it than the second flock. There are — sheep in both flocks.

7. What can those things in the air be? Yes, they are air-ships. Last evening the highest one rose 800 feet, and at other times it has risen twice as high, or — feet.

2

Divide all numbers between:

- | | |
|---------------------------------|---------------------------------|
| (a) 30 and 35 by 5 and
by 6. | (c) 40 and 45 by 5 and
by 8. |
| (b) 35 and 40 by 5 and
by 7. | (d) 45 and 50 by 5 and
by 9. |

3**DAILY FLASH PRACTICE**

Multiply:

6	6	6	6	6	6	6	6
8	4	9	11	7	12	5	6
-	-	-	-	-	-	-	-
9	3	9	7	8	7	8	8
4	8	6	4	5	6	4	6
-	-	-	-	-	-	-	-

4

1. Write in words: 50,500; 500,050; 5,505.
2. Write in figures: seven thousand seventy; seventy thousand seven hundred; seven hundred thousand seven.
3. Write in Roman numerals: 119; 214; 94.
4. Write in figures: LIX; XCIII; CVI. Continue.

5

DICTATION

1. Write in words 101,010.
2. Write in Roman numerals 249.
3. Write in figures five hundred thousand fifty.
4. How much will a peck of chestnuts cost at 10 cents a quart?
5. At 10 cents a pint how much must I pay for a gallon of vinegar?

6

Complete and learn:

$$\begin{array}{rcl} 6 \div 6 = & 1 \\ 12 \div 6 = & 2 \\ \text{to} \\ 72 \div 6 = & 12 \end{array}$$

$$\begin{array}{rcl} 6 \div 1 = 6 \\ 12 \div 2 = 6 \\ \text{to} \\ 72 \div 12 = 6 \end{array}$$

7

ORAL PROBLEMS

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. A candy merchant has in his window 11 quarter-pound boxes of candy. How many pounds of candy in all the boxes?
2. I put 5 gallons of peach preserves into pint jars. How many jars did I use?
3. If one quart of flour will make 18 biscuits, how many biscuits of the same size will 2 quarts make?
4. A tailor used $3\frac{1}{4}$ yards of goods for a coat and $1\frac{1}{4}$ yards for a vest. How many yards did he use for both?
5. Jane found 19 spools of cotton and 7 spools of silk thread in the sewing machine drawer. How many spools did she find in all?

6. *Add:* $\begin{array}{r}
 86 & 78 & 95 & 76 & 28 & 59 \\
 69 & \underline{86} & \underline{68} & \underline{87} & \underline{38} & \underline{24}
 \end{array}$

7. *Subtract:* $\begin{array}{r}
 165 & 143 & 161 & 254 & 352 & 561 \\
 97 & \underline{96} & \underline{78} & \underline{88} & \underline{48} & \underline{27}
 \end{array}$

8. *Multiply:* $\begin{array}{r}
 89 & 96 & 76 & 87 & 29 & 48 \\
 5 & \underline{6} & \underline{5} & \underline{6} & \underline{5} & \underline{6}
 \end{array}$

9. *Divide:* $6\overline{)198}$ $7\overline{)237}$ $8\overline{)360}$ $9\overline{)316}$ $6\overline{)537}$

10. Eight is what part of 16? Four is what part of 16?

11. Nancy bought a doll for \$1.25. She had \$.75 in her bank and her mother gave her the rest. How much did her mother give her?

12. A farmer had 96 turkeys and sold 78. How many had he left?

13. In the side of a five-story building are 45 windows. If there are the same number of windows in each story, how many windows in each story?

14. A woman at market paid \$.29 for peaches and \$.07 for lettuce. How much did she pay for both?

15. If a quarter of a pie is worth 5 cents, how much are 3 pies worth?

8

$27 \div 5$

$38 \div 7$

$35 \div 6$

$34 \div 6$

$44 \div 5$

$47 \div 5$

$39 \div 5$

$17 \div 3$

$38 \div 6$

$42 \div 8$

$33 \div 5$

$43 \div 5$

$48 \div 5$

$48 \div 9$

$49 \div 9$

9

WHAT I CAN LEARN BY MYSELF

(a) <i>Write</i> $\begin{array}{r} 34 \\ 2 \overline{) 68} \end{array}$ <i>Think</i> $30 + 4$ $2 \overline{) 60 + 8}$	(b) <i>Write</i> $\begin{array}{r} 34 \\ 2 \overline{) 68} \end{array}$ <i>Think</i> $\begin{array}{r} 6 \\ - 8 \\ \hline 8 \end{array}$ 2×30 2×4
--	--

Here are two ways for getting the answer in division. The way marked (a) is called *short division* because only the figures of the answer are written. The way marked (b) is called *long division* because one puts down figures for all the work. Solve the exercises below in both ways.

1. $2 \overline{) 468}$	2. $3 \overline{) 246}$	3. $7 \overline{) 147}$	4. $4 \overline{) 128}$	5. $9 \overline{) 189}$
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

6. $3 \overline{) 144}$	7. $7 \overline{) 392}$	8. $4 \overline{) 356}$	9. $6 \overline{) 324}$	10. $3 \overline{) 468}$
----------------------------	----------------------------	----------------------------	----------------------------	-----------------------------

11. $3 \overline{) 291}$	12. $5 \overline{) 672}$	13. $6 \overline{) 390}$	14. $2 \overline{) 341}$	15. $4 \overline{) 270}$
-----------------------------	-----------------------------	-----------------------------	-----------------------------	-----------------------------

10

- | | |
|-----------------------------------|------------------------------------|
| 1. $\frac{2}{5}$ of 40 \div 3 = | 6. $\frac{4}{5}$ of 45 \div 5 = |
| 2. $\frac{3}{4}$ of 24 \div 5 = | 7. $\frac{2}{3}$ of 27 \div 7 = |
| 3. $\frac{2}{3}$ of 36 \div 7 = | 8. $\frac{3}{4}$ of 28 \div 8 = |
| 4. $\frac{3}{5}$ of 35 \div 6 = | 9. $\frac{3}{4}$ of 45 \div 6 = |
| 5. $\frac{3}{4}$ of 32 \div 9 = | 10. $\frac{2}{3}$ of 27 \div 4 = |

11

A CHRISTMAS FAIR IN MEXICO — *Written*

What noise! How many things for children!

1. Here are 240 quarter-pound boxes of candy with pecan nuts. How much is all of it worth at \$.24 a pound (in our money)?

2. See these queer paper toys! Each one has a box of sweetmeats in it. Here is a clown for 98 cents, a ship for 56 cents and a parrot for 49 cents. Let us buy them all. How much change do we get from \$3.00?

3. Here is an Indian blanket which is 4 feet wide and 6 feet long for \$4.80. Here is another that is 3 feet wide and 4 feet long. The second blanket is sold at the same price per square foot as the first. What is the price of the second blanket? Drawing.

4. These beautiful doilies are 20 cents each and the smaller ones 10 cents each. If we buy one and a half dozen of each kind, how much must we pay? How much change do we get from a ten-dollar bill?

5. Now let us rent two of these burros for a ride over the plains. We pay in advance for each burro for 4 hours at 35 cents an hour. How much do we pay for both?

6. Before we go, let us take a look at these Indian baskets and pottery. You may buy two of each. The prices are:

Baskets: \$3.56; \$2.49; \$1.98

Pottery: \$4.16; \$7.85; \$2.39

12

1.	2.	3.	4.	5.
9)288	7)364	6)312	8)380	9)387
6.	7.	8.	9.	10.
6)270	9)216	7)385	6)228	8)432
11.	12.	13.	14.	15.
5)342	8)362	7)316	9)485	6)329
16.	17.	18.	19.	20.
4)356	8)344	9)486	3)296	5)399

13

DICTATION

1. Write in words 49,940.
2. Write in Roman numerals 349.
3. Write in figures ten thousand one.
4. How many square feet in a square yard?
5. How many quarts in 5 pecks?
6. Three quarts are what part of a gallon?
7. Two feet are what part of a yard?
8. Eighteen inches are what part of a yard?

14**WHAT I CAN LEARN BY MYSELF**

John had 24 pennies and exchanged them for dimes at the bank. How many dimes did he get? How many pennies had he left?

Tell us a short way to divide a number by 10.

1.	2.	3.	4.
$70 \div 10$	$700 \div 10$	$720 \div 10$	$865 \div 10$
$50 \div 10$	$500 \div 10$	$560 \div 10$	$789 \div 10$
$90 \div 10$	$900 \div 10$	$980 \div 10$	$654 \div 10$
$17 \div 10$	$517 \div 10$	$977 \div 10$	$381 \div 10$
$25 \div 10$	$853 \div 10$	$695 \div 10$	$406 \div 10$

15**A BLACKBOARD RACE**

One child from each row may find a place at the blackboard. Each may draw upon it a vertical line and write 6 at the top and the several digits at the teacher's dictation to the left as shown in the illustration. The child who writes correctly opposite the digit the product of 6 and that digit and finishes all before the other pupils scores a mark for his row. The rest of the class in the meantime should practice at their seats upon paper. The same device can be used with the division table of 6, by dictating the dividends.

6	
7	42
9	54
3	?
5	?
8	?
6	?
4	?

Continue with
digits rearranged.

16

Solve both by short and by long division:

1.	2.	3.	4.	5.
$3\overline{)1149}$	$4\overline{)1358}$	$6\overline{)1506}$	$7\overline{)1547}$	$6\overline{)5178}$
6.	7.	8.	9.	10.
$6\overline{)3266}$	$7\overline{)3568}$	$9\overline{)3258}$	$8\overline{)2728}$	$4\overline{)1918}$

17**ORAL PROBLEMS**

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. My aunt is 28 years old. She is 18 years younger than my uncle. How old is he?
2. How many shoes do nine horses need?
3. If a yard of ribbon costs \$.30, how much does $\frac{4}{5}$ of a yard cost?
4. I bought 10 handkerchiefs for \$2.50. How much was that for each?
5. Which is longer, $\frac{2}{3}$ of a foot or $\frac{3}{4}$ of a foot? How much?
6. Name the multiples of 5 below 60 that are even numbers. In what figure does each of the odd multiples of 5 end?
7. How much does a grocer receive for a bushel of apples at 8 cents a pound? 1 bu. = 60 lb.
8. A cook used a pint of molasses for each baking of cookies. How many bakings did 2 gallons of molasses last her?
9. If a quart of ice cream makes 6 dishes, how many people can be served from 2 gallons?

TERMS IN DIVISION 175

10. Add: $\begin{array}{r} 286 \\ 379 \\ \hline \end{array}$ $\begin{array}{r} 587 \\ 258 \\ \hline \end{array}$ $\begin{array}{r} 684 \\ 169 \\ \hline \end{array}$ $\begin{array}{r} 479 \\ 396 \\ \hline \end{array}$ $\begin{array}{r} 569 \\ 869 \\ \hline \end{array}$

11. Subtract: $\begin{array}{r} 265 \\ 198 \\ \hline \end{array}$ $\begin{array}{r} 536 \\ 279 \\ \hline \end{array}$ $\begin{array}{r} 475 \\ 278 \\ \hline \end{array}$ $\begin{array}{r} 364 \\ 297 \\ \hline \end{array}$ $\begin{array}{r} 526 \\ 318 \\ \hline \end{array}$

12. Multiply: $\begin{array}{r} 86 \\ 6 \\ \hline 5 \end{array}$ $\begin{array}{r} 79 \\ 6 \\ \hline 5 \end{array}$ $\begin{array}{r} 97 \\ 5 \\ \hline 6 \end{array}$ $\begin{array}{r} 68 \\ 5 \\ \hline 4 \end{array}$ $\begin{array}{r} 78 \\ 4 \\ \hline 6 \end{array}$

13. Divide: $4\overline{)812}$ $2\overline{)721}$ $4\overline{)483}$ $3\overline{)780}$ $2\overline{)817}$

14. William has a rope 13 yards long. How many feet in it?

15. My flower bed is 20 feet long and $\frac{1}{2}$ as wide. How many square feet does it contain? Drawing.

18

TERMS IN DIVISION

67 is the *quotient*.

The *divisor* is 7 $\overline{)469}$ is the *dividend*.

WHAT I CAN LEARN BY MYSELF

$$(a) \begin{array}{r} 4 \\ 3\overline{)12} \\ \quad 12 \\ \hline \end{array} \qquad \text{Check} \qquad 3 \times 4 = 12$$

$$(b) \begin{array}{r} 43 \\ 6\overline{)258} \\ \quad 24 \\ \hline \end{array} \qquad \text{Check} \qquad 6 \times 43 = 258$$

1. If the *dividend* and *divisor* are given, how can the *quotient* be found?

2. If the *quotient* and *divisor* are given, how can the *dividend* be found?

19

WRITTEN PROBLEMS

1. If one box holds 72 oranges, how many dozen oranges in 9 such boxes? Two ways.
2. How much did Mr. Smith pay at the Saturday market for the following: 2 hens at \$1.60; 3 lb. butter at \$.53; 6 lb. roast at \$.40?
3. Frank has 1 dozen waists with a half-dozen buttons on each. How many buttons on all the waists?
4. A woman sold 120 eggs at \$.40 a dozen. How much did she get for them?
5. In a school house were 60 windows each containing 18 square feet. How many square feet in all the windows? How many square yards?
6. A horse travels 24 miles in 6 hours. How far will it go at that rate in 9 hours? Two ways.
7. How much did a hotel keeper pay for 450 chairs at \$6 each?
8. In a train of 6 coaches are 342 passengers. How many passengers in each coach, on the average?
9. The curtains in a room containing 5 windows cost \$30. How much will curtains of the same quality cost for a hotel with 50 windows? Two ways.
10. The combined width of 4 equal lots is 288 feet. How wide is each?
11. A boy earns \$1.75 a day for 6 days and spends \$1.25 a day for 7 days. How much does he save in a week?
12. I had 5 dozen buttons and used $\frac{1}{4}$ of them on aprons for Lucy. How many buttons on Lucy's aprons? Two ways.

20*Subtract:*

1.	2.	3.	4.	5.
<u>5649</u>	<u>6573</u>	<u>5641</u>	<u>6736</u>	<u>4231</u>
<u>2781</u>	<u>3798</u>	<u>4647</u>	<u>3997</u>	<u>2987</u>
6.	7.	8.	9.	10.
<u>7274</u>	<u>6531</u>	<u>9276</u>	<u>7456</u>	<u>5273</u>
<u>2896</u>	<u>3973</u>	<u>6598</u>	<u>3889</u>	<u>2186</u>

21

WHAT I CAN LEARN BY MYSELF

1.	2.	3.
$90 \div 3$	$60 \div 3$	$960 \div 3$
$90 \div 30$	$60 \div 30$	$960 \div 30$
4.	5.	6.
$780 \div 2$	$250 \div 5$	$840 \div 4$
$780 \div 20$	$250 \div 50$	$840 \div 40$
7.	8.	9.
$680 \div 4$	$720 \div 6$	$480 \div 8$
$680 \div 40$	$720 \div 60$	$480 \div 80$

22*Multiply:*

1.	2.	3.	4.	5.
<u>360</u>	<u>470</u>	<u>960</u>	<u>750</u>	<u>870</u>
<u>47</u>	<u>65</u>	<u>43</u>	<u>64</u>	<u>56</u>
6.	7.	8.	9.	10.
<u>356</u>	<u>768</u>	<u>897</u>	<u>965</u>	<u>456</u>
<u>421</u>	<u>245</u>	<u>432</u>	<u>654</u>	<u>427</u>

23

THE HARE AND THE TORTOISE — III

See Exercise 6, page 5.

1.	76	85	47	98	24
	— 9	— 8	— 9	— 7	— 7
2.	85	74	63	56	35
	+ 6	+ 9	+ 8	+ 9	+ 7
3.	89	68	46	27	35
	— 7	— 8	— 9	— 6	— 9
4.	98	74	65	83	76
	— 9	+ 8	— 6	+ 9	— 7
5.	81	77	65	97	45
	— 8	+ 9	— 7	+ 9	— 6

24

ORAL PROBLEMS

Before solving tell the sign (or signs) of the operation to be used in the problems.

1. Elizabeth had \$.32. Anna had $\frac{3}{4}$ as much. How much had Anna?
2. Howard is 16 years old. He is 9 years older than Hattie. How old is Hattie?
3. Mildred expected to spend 26 days visiting a friend. She was called home a week before the time was up. How long was her visit?
4. If I saw 8 inches from a board that is a foot and 3 inches long, how many inches remain?
5. 15 qt. + 7 qt. = how many gal.?

6. Frank had a knife worth 35 cents. He traded it to William for a knife and two nickels. How much was William's knife worth?

7. A train which leaves at 11:45 A.M., reaches the first station at 12:15 P.M. How long has it been on the road?

8. Frank is $10\frac{1}{2}$ years old and Carl is 18 months younger. How old is Carl?

9. A canoe broke the rope that fastened it to the bank. The next day at the same hour it was found 48 miles down the stream. How fast per hour was the water flowing?

25

WHAT I CAN LEARN BY MYSELF

$$(a) \begin{array}{r} 4\frac{1}{3} \\ 3 \overline{) 13} \\ \quad 12 \\ \hline \quad 1 \end{array} \qquad \text{Check} \qquad 3 \times 4 + 1 \text{ (remainder)} = 13$$

$$(b) \begin{array}{r} 43\frac{3}{6} \\ 6 \overline{) 261} \\ \quad 24 \\ \hline \quad 21 \\ \quad 12 \\ \hline \quad 9 \end{array} \qquad \text{Check} \qquad 6 \times 43 + 3 \text{ (remainder)} = 261$$

Hereafter check all your work in division.

26

Add upward:

1.	2.	3.	4.	5.
979	789	798	988	797
897	995	979	797	882
978	567	386	529	469
747	976	897	996	776
586	457	982	787	665
679	778	459	679	737
746	995	986	757	178
<u>598</u>	<u>789</u>	<u>897</u>	<u>988</u>	<u>848</u>

27

PLAYING TEA-STORE



Mrs. Jones: How much is pepper an ounce?

Mr. Smith: Pepper is sold for 5 cents an ounce.

Mrs. Jones: Please let me have four ounces.

Bobby Jones: Oh, mother, please may I be weighed?

Mrs. Jones: Yes, dear, if Mr. Smith is willing.

Continue the game until you are familiar

with ounces, pounds, quarter-pounds and half-pounds.

Use real scales. Pepper, cloves, all-spice and mustard are sold for 5 cents an ounce; nutmeg, cinnamon and celery seed for 10 cents an ounce; and tea of all kinds from 60 cents to \$1.25 a pound.

28

Solve both by short and by long division:

$$\begin{array}{r} \text{1.} & \text{2.} & \text{3.} & \text{4.} & \text{5.} \\ 3) \overline{5106} & 6) \overline{2709} & 9) \overline{3654} & 2) \overline{3607} & 4) \overline{3597} \end{array}$$

$$\begin{array}{r} \text{6.} & \text{7.} & \text{8.} & \text{9.} & \text{10.} \\ 7) \overline{2534} & 8) \overline{2851} & 6) \overline{5591} & 7) \overline{4554} & 9) \overline{3242} \end{array}$$

29

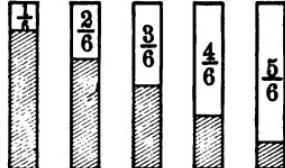
Complete and learn:
— ounces make 1 pound.

30

SIXTHS

Complete and learn:

$$\begin{array}{ll} \frac{1}{6} \text{ of } 6 = 1 & \frac{5}{6} \text{ of } 6 = 5 \\ \frac{1}{6} \text{ of } 12 = 2 & \frac{5}{6} \text{ of } 12 = 10 \\ \text{to} & \text{to} \\ \frac{1}{6} \text{ of } 72 = 12 & \frac{5}{6} \text{ of } 72 = 60 \end{array}$$



31

Subtract:

1.	2.	3.	4.	5.
5643	8566	6775	7568	9256
<u>2887</u>	<u>3689</u>	<u>2786</u>	<u>5779</u>	<u>4578</u>

6.	7.	8.	9.	10.
9756	8072	6705	3900	5743
<u>5997</u>	<u>3678</u>	<u>3949</u>	<u>2957</u>	<u>2956</u>

32

ROBINSON CRUSOE'S CALENDAR

"After I had been there about ten or twelve days, it came into my thoughts that I should lose my reckoning of time for want of books and pen and ink, and should even forget the Sabbath-day for the working days; but to prevent this, I cut with my knife upon a large post, in capital letters; and making it into a great cross, I set it up on the shore where I first landed; viz., 'I came on shore here on the 30th of September (Saturday) 1659.'

"Upon the sides of this square post I cut every day a notch with my knife, and every seventh notch was as long again as the rest, and every first day of the month as long again as that long one; and thus kept my calendar, or weekly, monthly and yearly reckoning of time."

1. Make a picture of the calendar for the month of October, 1659, as you think Crusoe made it. Now make it as it would look on one of our modern calendars.

2. If October 1, 1659, was Sunday, what was the date of the next Sunday? Of the second Sunday?

3. November 11, 1659, was what day of the week? How can you get this answer without counting up the days one by one?

4. How many days in 7 weeks? In 8 weeks? In 12 weeks?

5. How many weeks in a year? How many days?

6. How often is there a new moon?

Learn: "Thirty days has September,
April, June and November,
All the rest have thirty-one,
Save February which has twenty-eight, in fine,
Till Leap-Year gives it twenty-nine."

33

Add upward:

1.	2.	3.	4.	5.
879	978	989	899	847
973	899	679	758	172
569	958	987	589	732
777	487	959	976	669
895	878	875	885	776
478	765	568	689	466
967	597	997	797	885
878	<u>789</u>	<u>786</u>	<u>688</u>	<u>797</u>

34

ORAL PROBLEMS

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. How many ounces in 2 pounds?
2. A man saves \$30 a month. How long will it take him to save \$360?
3. A dealer buys 20 pairs of shoes at \$6.00 a pair and sells them at \$8.00 a pair. How much does he make on them all?
4. A mother and daughter together earn \$12 in two days. The mother earns \$4 a day. How much does the daughter earn?
5. On Monday there were 24 girls present at school and on Tuesday 22. What was the average attendance for the two days?
6. A man sold a horse for \$120 and lost \$20 by the sale. How much did the horse cost him?
7. A train started with 200 passengers. After 75 got off and 50 got on, how many passengers were on the train?

8. If a postman walks 54 miles in 6 days, how many miles does he walk in 2 days?
9. How far does a steam launch go in 6 hours that goes at the rate of 12 miles an hour?
10. A man paid \$80 each for 2 cows and \$120 for a third one. How much did he pay for all?
11. A farmer had 90 sheep. How many had he left after selling $\frac{9}{10}$ of them?
12. A grocer sold 25 pounds of butter on Monday and 5 pounds more on Tuesday than on Monday. How much did he sell on both days?
13. If 5 tons of coal cost \$40, how much will 6 tons cost?
14. How much will 2 gal. of molasses cost at 25 cents a pint?

35**DICTIONATION**

1. Write in figures fifty dollars and five cents.
2. Write in Roman numerals 194.
3. How many ounces in $1\frac{1}{4}$ pounds?
4. In a chorus of 86 children, 9 children were absent. How many were present?
5. Nine calves were sold at \$16 each. How much did they bring?

36

1.	2.	3.	4.
$47 \div 8$	$34 \div 7$	$29 \div 3$	$51 \div 8$
$52 \div 5$	$31 \div 4$	$40 \div 7$	$43 \div 9$
$34 \div 6$	$46 \div 9$	$54 \div 6$	$28 \div 3$
$63 \div 5$	$33 \div 8$	$44 \div 5$	$38 \div 6$
$32 \div 9$	$25 \div 6$	$72 \div 6$	$47 \div 9$

37

THE TABLE OF SEVENS

Complete:

$$\begin{array}{ccccccc}
 7 & 7 & 7 & 7 & 7 & 7 \\
 7 & 7 & 7 & 7 & 7 & 7 \\
 7 & 7 & 7 & 7 & 7 & 7 \\
 7 & 7 & 7 & 7 & 7 & 7 \\
 7 & 7 & 7 & 7 & 7 & 7 \\
 49 & 7 & 7 & 7 & 7 & 7 \\
 \hline ? & 7 & 7 & 7 & 7 & 7 \\
 ? & 7 & 7 & 7 & 7 & 7 \\
 ? & 7 & 7 & 7 & 7 & 7 \\
 ? & 7 & 7 & 7 & 7 & 7 \\
 \hline & & & & & 84
 \end{array}$$

*Make the Table of Sevens
and learn it.*

38

WHAT I CAN LEARN BY MYSELF

*Write**Think*

$$\begin{array}{rcccl}
 & 43 & & & 85\frac{3}{40} \\
 1. \quad 90)3870 & 360 & 40 \times 90 & 2. \quad 40)3403 & 320 \\
 & \underline{270} & & & \underline{203} \\
 & 270 & 3 \times 90 & & \underline{200} \\
 & \underline{270} & & & 3
 \end{array}$$

Why is the first figure in the quotient written in tens place?

$$\begin{array}{ccccc}
 3. & 4. & 5. & 6. & 7. \\
 80)3200 & 60)4660 & 40)3880 & 60)4140 & 30)7860 \\
 8. & 9. & 10. & 11. & 12. \\
 50)3900 & 40)3480 & 60)3820 & 70)3150 & 90)2160
 \end{array}$$

39

WRITTEN PROBLEMS

1. A man's wages were raised from \$3.35 to \$3.75 a day. How much increase did that give him in 4 weeks?
2. A man makes \$1200 a year and spends $\frac{1}{4}$ of it. How much does he save?
3. A grocer buys a box containing 360 eggs which he sells at \$.42 a dozen. How much does he get for them?
4. A bushel of wheat weighs 60 pounds. What is the weight of 360 bushels?
5. A gardener raised 5 bu. 3 pk. of white potatoes and sold them at \$.40 a peck. How much did he get for them?
6. If the milkman charges us 8 cents a pint and 15 cents a quart for milk, how much do we save by buying 365 quarts of milk by the quart?
7. If a farmer cut $12\frac{1}{2}$ tons of hay from one field and 15 tons from another, how many tons did he cut from both?
8. How many badges 3 inches long can be cut from 15 bolts of ribbon each containing 10 yards?
9. My watch will run from 11 A.M. to 1 P.M. of the next day without rewinding. How many hours is that?
10. There are 270 acres in $\frac{3}{4}$ of my farm. How many acres in $\frac{1}{4}$ of it? In the whole farm? Drawing.

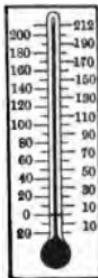
40

Complete and learn:

$$\begin{array}{rcl} 8 \times 7 = 56 & \text{to} & 12 \times 7 = 84 \\ 7 \times 8 = 56 & & 7 \times 12 = 84 \end{array}$$

41**READING A THERMOMETER**

1. What is the proper temperature for a school room?
2. How many degrees between the freezing point and the boiling point? (32° and 212°).
3. When a thermometer was out of doors it registered three degrees below 0. It now registers 71. How many degrees has it risen?
4. Look in your daily paper to find what was the highest temperature yesterday. The lowest. Why do people care about this? Continue.

**42**

Multiply:

1.	2.	3.	4.	5.	6.
472	983	489	892	786	869
<u>460</u>	<u>560</u>	<u>320</u>	<u>650</u>	<u>470</u>	<u>350</u>

7.	8.	9.	10.	11.	12.
657	875	968	768	586	497
<u>540</u>	<u>640</u>	<u>460</u>	<u>540</u>	<u>650</u>	<u>460</u>

Do not permit the pupils to write unnecessary ciphers.

43

Divide all the numbers between:

- 42 and 48 by 6 and by 7.
- 48 and 54 by 6 and by 8.
- 54 and 60 by 6 and by 9.

44

IN THE ALPS — *Oral*

them. How much do you pay?

4. Coasting in winter is great sport. One famous slide 3000 feet long has been coasted in 1 minute. How many feet was that in 1 second?

5. Jan's little brother goes 2 miles to school. In one mile are 5280 feet. How many feet does he walk to school? About how many feet is your home from school? Measure the number of feet around your school block.

1. "Tir-ra-la-la." That is the horn of Jan, the shepherd, far up the mountain. He has 82 sheep of his own and 90 of his neighbors'. How many sheep has he in all?

2. In the long winter days he carves most beautiful things from wood. See, here is a tiny chamois for \$.45. He carved and sold 20 of them last winter. How much money did they bring him?

3. Here is a salad knife and fork for \$.75; a cuckoo-clock for \$7.09; a bread plate for \$.98; a fruit-platter for \$2.19. You may buy any two of

6. The Simplon Tunnel through the Alps was begun in 1898 and finished in 1905. How long was it in building? How many years since it was finished?

7. A train going at the rate of 25 miles an hour takes 30 minutes to go through the Simplon Tunnel. How long is the tunnel?

45

1. Add: $\begin{array}{r} 28 \\ + 9 \\ \hline \end{array}$ $\begin{array}{r} 57 \\ + 8 \\ \hline \end{array}$ $\begin{array}{r} 46 \\ + 7 \\ \hline \end{array}$ $\begin{array}{r} 39 \\ + 8 \\ \hline \end{array}$ $\begin{array}{r} 48 \\ + 6 \\ \hline \end{array}$ $\begin{array}{r} 99 \\ + 8 \\ \hline \end{array}$

2. Subtract: $\begin{array}{r} 37 \\ - 9 \\ \hline \end{array}$ $\begin{array}{r} 26 \\ - 8 \\ \hline \end{array}$ $\begin{array}{r} 104 \\ - 8 \\ \hline \end{array}$ $\begin{array}{r} 77 \\ - 8 \\ \hline \end{array}$ $\begin{array}{r} 65 \\ - 9 \\ \hline \end{array}$ $\begin{array}{r} 56 \\ - 7 \\ \hline \end{array}$

3. Multiply: $\begin{array}{r} 86 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 65 \\ \times 8 \\ \hline \end{array}$ $\begin{array}{r} 75 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 56 \\ \times 9 \\ \hline \end{array}$ $\begin{array}{r} 98 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 96 \\ \times 7 \\ \hline \end{array}$

4. Divide: $6\overline{)593}$ $7\overline{)458}$ $9\overline{)639}$ $8\overline{)527}$ $7\overline{)395}$

46**SOME FRACTIONS**

1. Draw a line 8 inches long. Show $\frac{3}{4}$ of it.
2. Draw a circle and divide it as nearly as possible into 6 equal parts. Show $\frac{5}{6}$ of it.
3. If $\frac{1}{2}$ of a melon costs \$.40, how much does $\frac{1}{4}$ of the melon cost? Show by drawing. How much does the whole melon cost?
4. If $\frac{2}{3}$ of a pie costs 6 cents, how much will the whole pie cost? Drawing.
5. If a tile floor is 30 feet wide and 40 feet long, how many square feet are there in $\frac{1}{4}$ of the floor? In $\frac{1}{3}$ of the floor? Drawing.

47

Check by adding both ways:

1.	2.	3.	4.	5.
795	878	898	697	986
977	699	969	947	745
683	568	678	685	896
749	975	787	868	789
883	289	994	957	697
979	777	467	888	864
458	548	789	776	389
<u>797</u>	<u>798</u>	<u>879</u>	<u>487</u>	<u>297</u>

For additional practice, use previous exercises, adding downward.

48

Complete and learn:

- seconds make 1 minute.
- minutes make 1 hour.
- hours make 1 day.
- days make 1 week.
- weeks make 1 year.
- days make 1 common year.
- days make 1 leap year.

49

THE MERRY-GO-ROUND

See Exercise 96, page 109, and write the multiples of 6 in the circumference. Or play the game in this way: Distribute two sets of cards bearing the multiples of 6 to the pupils arranged in competing rows. When the leader calls, “ $\frac{1}{6}$,” “ $\frac{5}{6}$,” or “ $\frac{4}{6}$,” the first two pupils (who hold duplicate cards) answer. The one answering first scores 5 for his side. Continue in this way.

50

WRITTEN PROBLEMS

1. I have $16\frac{3}{4}$ pounds of molasses candy. How much shall I have after selling 12 quarter-pound boxes?
2. How many inches of ribbon in $12\frac{5}{8}$ yards?
3. Of three trains entering Chicago, the first has 359 passengers, the second 59 more than the first, and the third as many as the other two together. How many passengers in all three trains?
4. A man bought a lot for \$2570. He paid \$358 for grading and digging a cellar; \$166.40 for a sidewalk; \$520 for street improvements. His house cost him the same amount that he had spent for the lot and improvements. How much did he invest in all?
5. If peaches of a certain size average 112 to the bushel, how many jars can be filled from 4 bushels if 16 half peaches are put into one quart jar?
6. How many peaches in a bushel that fills 12 quart jars, counting 9 peaches to the jar?
7. A city block 560 feet long and 540 feet wide was made into a playground. How many yards of fencing were needed?
8. How long will 6 gallons of oil last for a lamp that burn 3 pints in a week?
9. How many pounds of sugar at 10 cents a pound can be bought in exchange for 5 pounds of butter at 50 cents a pound?
10. How many yards of matting one yard wide must I buy for a room 18 feet wide and 21 feet long?
11. How much will $2\frac{1}{4}$ pounds of cinnamon cost at 5 cents an ounce?
12. At 8 cents a pound how much will a grocer receive for 2 bu. of apples? 60 lb. = 1 bu.

51*Complete and learn:*

$$7 \div 7 = 1$$

$$14 \div 7 = 2$$

$$\begin{array}{r} \text{to} \\ 84 \div 7 = 12 \end{array}$$

$$7 \div 1 = 7$$

$$14 \div 2 = 7$$

$$\begin{array}{r} \text{to} \\ 84 \div 12 = 7 \end{array}$$

52**1.**

$$45 \div 8$$

$$63 \div 7$$

$$34 \div 5$$

$$49 \div 7$$

$$41 \div 6$$

2.

$$57 \div 9$$

$$35 \div 7$$

$$38 \div 8$$

$$56 \div 7$$

$$29 \div 6$$

3.

$$42 \div 7$$

$$49 \div 5$$

$$77 \div 7$$

$$56 \div 8$$

$$84 \div 7$$

4.

$$51 \div 9$$

$$32 \div 7$$

$$63 \div 5$$

$$42 \div 8$$

$$56 \div 6$$

53**ROMAN NUMERALS**

$$D = 500$$

$$M = 1000$$

Complete the table:

$$1 = I$$

$$2 = II$$

to

$$10 = X$$

$$10 = X$$

$$20 = XX$$

to

$$100 = C$$

$$100 = C$$

$$200 = CC$$

to

$$1000 = M$$

54

$$1. \frac{5}{6} \text{ of } 54 + 9 =$$

$$2. \frac{4}{5} \text{ of } 45 + 7 =$$

$$3. \frac{3}{4} \text{ of } 36 + 6 =$$

$$4. \frac{2}{3} \text{ of } 24 + 9 =$$

$$5. \frac{4}{6} \text{ of } 48 + 9 =$$

$$6. \frac{2}{3} \text{ of } 27 + 9 =$$

$$7. \frac{4}{5} \text{ of } 60 + 7 =$$

$$8. \frac{5}{6} \text{ of } 42 + 9 =$$

$$9. \frac{3}{4} \text{ of } 28 + 6 =$$

$$10. \frac{3}{6} \text{ of } 54 + 8 =$$

55

AT THE TAILOR'S — *Dramatize*

Each girl may be measured for a new cloak and each boy for a new overcoat. After being measured you may select your goods (*paper strips a yard wide*) and with the tailor make out an estimate of the whole cost. A rough paper pattern will help you to tell about how much goods will be needed. Here is the order in which the measurements will be taken in our shop:

1. Entire length.
2. Length of shoulder seam.
3. Length of sleeve.
4. Length of collar.
5. Length around the wrist.

6. Distance between the arms in front and in back.

Allow \$3.50 for buttons, thread and lining. The cloth is 36 inches wide and costs \$3.00 a yard. The tailoring will be \$5.00.

Do not help the pupils too much. Let half of the boys and half of the girls play tailors to the others — boys measuring boys.

56

ORAL PROBLEMS

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. Butter selling at \$.38 per pound rose \$.09. What was then the market price?
2. A horse that had cost \$140 was sold so as to gain $\frac{2}{7}$ of the cost. For how much was it sold?
3. If 6 hats cost \$42, how much will 7 similar hats cost?
4. Out of a can containing 7 gallons of milk, $5\frac{1}{2}$ gallons were sold. How many gallons were left?
5. If a bushel of wheat weighs 60 pounds, how much do 20 bushels weigh?
6. If 4 barrels of rice cost \$54, how much will 8 barrels cost?
7. In one mile of railway track are 322 rails. How many rails in 3 miles?
8. A steamer traveled 723 miles in 3 days. How many miles did it average in one day?
9. I buy 6 tons of bituminous coal at \$8.00 a ton. I have \$39. How much more do I need?
10. Six feet of molding cost \$.54. How much will 6 yards cost?
11. There are 7 lots of equal width facing a block 420 feet long. How wide is each lot?
12. A man bought a lot for \$2000. He built a house for \$4500. He then sold the property for \$7500. How much did he gain?
13. A man paid \$45 on a debt of \$80. How much did he still owe?
14. How many weeks in 3 years?

57

WHAT I CAN LEARN BY MYSELF

	2. $12 \overline{) 514}$	3. $32 \overline{) 869}$
1. $21 \overline{) 6451}$	4. $41 \overline{) 2296}$	5. $23 \overline{) 1196}$
$\frac{63}{151}$	6. $81 \overline{) 3\ 04}$	7. $52 \overline{) 2806}$
$\frac{147}{4}$	8. $31 \overline{) 1744}$	9. $61 \overline{) 4875}$
	10. $81 \overline{) 2106}$	11. $32 \overline{) 8000}$

58

Show $\frac{1}{7}$, $\frac{2}{7}$ to $\frac{6}{7}$ by dividing rectangles and circles.

Complete and learn:

$$\begin{array}{ll} \frac{1}{7} \text{ of } 7 = 1 & \frac{6}{7} \text{ of } 7 = 6 \\ \frac{1}{7} \text{ of } 14 = 2 & \text{to} \quad \frac{6}{7} \text{ of } 14 = 12 \\ \text{to} & \text{to} \\ \frac{1}{7} \text{ of } 84 = 12 & \frac{6}{7} \text{ of } 84 = 72 \end{array}$$

59

Read:

1. MCCC; MD; MDC; MCD.
2. MCM; MCDVI; MDCCIX.
3. MCCLII; MLIX; MDXXVIII.

Write in Roman numerals:

1. 1010; 1100; 1001.
2. 1456; 1967; 1785.
3. 1874; 1679; 1973.

60

ROBINSON CRUSOE — *Written*

1. Robinson Crusoe was 27 years old on the 30th of September, 1659, the day he was cast ashore on the island. What was the date of his birth?

2. He swam from the shore to the ship and back eleven times. The distance each way was 2 miles. A mile is 5280 feet. How many feet did he swim in all?

3. You will remember that he made the yard in front of his cave the shape of a semi-circle with a radius of 8 yards. About how long was the fence he put around the yard? Find this by actually measuring a semi-circle with a radius of 8 yards in the school yard. *Class work.*



4. He divided his 140 pounds of powder into 10 little bags. If the bags were all of the same size, how many pounds were in each bag?

5. The first year he gathered 200 bunches of wild grapes for raisins. If the bunches weighed on the average $\frac{3}{4}$ of a pound, how much did all the grapes weigh?

6. He made a fence for his goats around a square-cornered piece of ground. It was 150 yards long and 100 yards wide. How many feet of fencing did he use?

7. He found the man Friday, after he had been on the island a quarter of a century (century = one hundred years). In what year was that?

61*Add:*

1.	2.	3.	4.	5.
996	767	988	899	697
868	888	896	985	969
778	599	486	986	897
786	948	859	358	653
898	886	884	985	479
959	878	678	979	386
699	659	967	457	897
<u>689</u>	<u>786</u>	<u>889</u>	<u>898</u>	<u>798</u>

62**ORAL PROBLEMS**

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. In a crate containing 144 eggs, 9 were broken. How many eggs were unbroken?
2. At \$.50 each, what is the cost of 20 waste baskets?
3. Susan wrote 48 spelling words on one side of her paper and 19 on the other. How many spelling words did she write in all?
4. A dealer paid \$9 for 10 neckties. How much was that for each?
5. If there are seats for 18 people in one bus, how many seats are there in 4 busses?
6. If 3 pairs of gloves cost \$6, how much will 9 pairs cost?
7. A man paid \$67 for a suit of clothes. This was \$18 more than he paid for his overcoat. How much did the overcoat cost him?
8. A club bought 20 dinner plates at \$.75 each. How much did the plates cost? Two ways.

63

9. *Add:* 567 896 764 658 Continue daily.
279 323 189 491

10. *Subtract:* 456 287 614 656 Continue daily.
79 68 85 97

11. *Multiply:* 38 98 69 67 67 Continue daily.
7 6 7 8 9

12. *Divide:* 7) 378 6) 583 9) 408 8) 439 Continue daily.

13. How many lemons at 3 cents each can you buy for a half dollar?

14. How long will it take an automobile to go 30 miles at the rate of 12 miles an hour?

64

Subtract:

1.	2.	3.	4.	5.
<u>4867</u>	<u>6546</u>	<u>7435</u>	<u>8542</u>	<u>9243</u>
<u>3988</u>	<u>2759</u>	<u>4897</u>	<u>7698</u>	<u>7658</u>

6.	7.	8.	9.	10.
<u>3655</u>	<u>7546</u>	<u>5322</u>	<u>7344</u>	<u>8107</u>
<u>2659</u>	<u>2867</u>	<u>1367</u>	<u>4479</u>	<u>3569</u>

11.	12.	13.	14.	15.
<u>8431</u>	<u>6922</u>	<u>5826</u>	<u>7886</u>	<u>6071</u>
<u>2457</u>	<u>5946</u>	<u>2828</u>	<u>1989</u>	<u>3189</u>

65**DICTION**

1. Write: in figures, one hundred one thousand ten; in words, 94,049.
2. Write 1492 in Roman numerals.
3. At 5 cents an ounce, how much will three quarters of a pound of cinnamon cost?
4. If 12 chairs cost \$40, how much will 3 chairs cost?
5. How much lace must I buy for the ends of a dresser scarf 18 inches wide?

66

Divide all the numbers between:

$$\begin{array}{l} 56 \text{ and } 63 \text{ by } 7 \text{ and } 8 \\ 63 \text{ and } 70 \text{ by } 7 \text{ and } 9 \end{array}$$

67**WHAT I CAN LEARN BY MYSELF**

Multiply without pencil:

$$\begin{array}{r} 30 & 31 & 32 & 33 & 34 & 35 \\ \underline{7} & \underline{7} & \underline{7} & \underline{7} & \underline{7} & \underline{7} \\ 40 & 41 & 42 & 43 & 44 & 45 \\ \underline{7} & \underline{7} & \underline{7} & \underline{7} & \underline{7} & \underline{7} \end{array}$$

In which of these exercises did you "carry" and in which did you not? Before getting the answers in the following tell in which you will "carry."

$$\begin{array}{r} 74 & 61 & 87 & 90 & 53 & 68 \\ \underline{7} & \underline{6} & \underline{4} & \underline{7} & \underline{2} & \underline{7} \end{array}$$

68

Divide:

1. 1242 by 20; 21; 23.
2. 2272 by 30; 32; 33.
3. 3402 by 40; 41; 43.
4. 1800 by 60; 62; 63.
5. 4792 by 31; 33; 35.
6. 8324 by 40; 41; 42.
7. 7205 by 21; 22; 23.
8. 6507 by 30; 31; 33.

Before writing the first figure in the quotient see whether the product of the first figure and the divisor is less than the first three figures in the dividend. Do this without pencil as you did in Exercise 67. Repeat the process with the second figure in the quotient. Check.

69

GRANDMOTHER'S COVERLET

Grandmother's coverlet has 8 pieces in one large square. How many pieces in 8 squares? In 9 squares? In 12 squares?



8	8	8	8	8	8
8	8	8	8	8	8
8	8	8	8	8	8
8	8	8	8	8	8
8	8	8	8	8	8
8	8	8	8	8	8
8	8	8	8	8	8
8	8	8	8	8	8
64	8	8	8	8	8
	?	8	8	8	8
	?	8	8	8	8
	?	8	8	8	8
					96

*Make the Table of Eights
and learn it.*

70**THE MERRY-GO-ROUND**

See Exercise 96, page 109. Write 49, 35, 63, 42, 56, 21, 84, 28 in the circumference and $\frac{1}{4}$ in the center.

71**PLAYING DRY GOODS STORE**

Here are the prices at our store:

Ask pupils to verify at a real store.

Muslin, 16¢ per yd.	Boys' suits, \$12.00
Gingham, 25¢ per yd.	Overcoats, \$10.00
Table linen, \$1.75 per yd.	Gloves, \$.75
Ribbon, 12¢ per yd.	Neckties, 25¢
India linen, 60¢ per yd.	Girls' hats, \$4.50
Silk, \$2.00	Cotton blankets, \$4.25
Broadcloth, \$2.50	Woolen blankets, \$8.50
Hosiery, 90¢	Overshoes, 90¢
Boys' caps, \$1.50	Paper of pins, 5¢
Boys' waists, 90¢	Buttons, 20¢ per doz.

With some customers you may wish to run a credit account and send in your bill on the first of the month. If so, make it out in the following manner:

New York, Feb. 1, 1920

Mrs. W. E. Stout

Bought of OUR SCHOOL STORE

Jan. 20	2½ yd. muslin at 8¢	20
	1 girl's hat at \$4.50	4 50
	5 yd. ribbon at 12¢	60
Jan. 24	2 woolen blankets at \$4.50	9 00
	10 yd. table linen at 75¢	7 50
		21 80

Received payment

OUR SCHOOL STORE

By J. C. M.

72

Add:

1.	2.	3.	4.	5.
898	999	887	799	879
593	458	989	987	968
869	898	839	969	795
978	987	596	688	493
984	998	888	676	879
599	789	779	858	689
868	879	598	696	768
978	<u>768</u>	<u>877</u>	<u>789</u>	<u>876</u>

73

Find the difference:

1.	2.	3.	4.	5.
4567	5475	7644	6752	9762
<u>2769</u>	<u>3678</u>	<u>3975</u>	<u>5986</u>	<u>5986</u>

6.	7.	8.	9.	10.
5533	6344	7486	9233	8003
<u>2698</u>	<u>3759</u>	<u>5988</u>	<u>5684</u>	<u>5798</u>

74

Find the product:

1.	2.	3.	4.	5.
609	870	507	856	708
<u>760</u>	<u>960</u>	<u>493</u>	<u>475</u>	<u>647</u>

6.	7.	8.	9.	10.
543	683	569	780	807
<u>906</u>	<u>780</u>	<u>204</u>	<u>406</u>	<u>625</u>

75

DICTATION

1. $\frac{6}{7}$ of 63 + 11 =
2. $98 \div 7 =$
3. I have \$37. How many five-dollar hats can I buy?
4. At 60 cents a quart, how much will 5 pints of cream cost?
5. A woman had 107 hens and sold all but 9. How many did she sell?

76*Complete and learn:*

$$\begin{array}{r} 9 \times 8 = 72 \\ 8 \times 9 = 72 \end{array}$$

to

$$\begin{array}{r} 12 \times 8 = 96 \\ 8 \times 12 = 96 \end{array}$$

77

- | | | |
|-------------------|--------------------|--------------------|
| 1. $2196 \div 23$ | 6. $2042 \div 32$ | 11. $2993 \div 41$ |
| 2. $1457 \div 31$ | 7. $2376 \div 72$ | 12. $2170 \div 62$ |
| 3. $2976 \div 93$ | 8. $2788 \div 82$ | 13. $1633 \div 72$ |
| 4. $1386 \div 63$ | 9. $1248 \div 52$ | 14. $2273 \div 91$ |
| 5. $1464 \div 61$ | 10. $2336 \div 73$ | 15. $2916 \div 83$ |

78*Complete and learn:*

$$\begin{array}{r} 8 \div 8 = 1 \\ 16 \div 8 = 2 \\ \text{to} \\ 96 \div 8 = 12 \end{array}$$

$$\begin{array}{r} 8 \div 1 = 8 \\ 16 \div 2 = 8 \\ \text{to} \\ 96 \div 12 = 8 \end{array}$$

79*Add and prove:*

1.	2.	3.	4.	5.
798	798	697	997	686
989	884	969	569	549
549	658	578	798	898
786	898	786	956	587
987	885	998	868	689
678	999	959	688	586
988	459	597	869	484
<u>789</u>	<u>886</u>	<u>789</u>	<u>978</u>	<u>987</u>

80

ORAL PROBLEMS

1. Read MCDXCII; MDCCLXXVI. Write the present year in Roman numerals.
2. How many yards of fringe will be needed to finish the ends of a rug $4\frac{1}{2}$ feet wide?
3. How much will $2\frac{1}{2}$ yards of ribbon cost at \$.14 a yard?
4. Read: 100100; 10010; 100001.
5. $\frac{6}{7}$ of 63 \div 8 = ?
6. A gardener received \$5.00 for geraniums at \$.25 each. How many did he sell?
7. Wallace lives 6 blocks from school. How many blocks does he walk in going to and from school in 2 days if he goes home at noon?
8. At $\$2\frac{1}{2}$ a month, how much is my telephone bill for 3 months?
9. A man sold a cow for \$84 and lost \$19. How much had the cow cost him?
10. I paid \$120 for a pony and $\frac{5}{6}$ as much for a cart. How much did the cart cost me?

11. Add: 378 498 567 765 798
 $\underline{488}$ $\underline{376}$ $\underline{399}$ $\underline{259}$ $\underline{269}$

12. Subtract: 436 278 107 284 400
 $\underline{89}$ $\underline{99}$ $\underline{59}$ $\underline{98}$ $\underline{73}$

13. Multiply: 86 45 83 95 84 68
 $\underline{7}$ $\underline{9}$ $\underline{6}$ $\underline{4}$ $\underline{7}$ $\underline{4}$

14. Divide: 7)469 8)569 6)414 7)651 9)659

15. $\frac{5}{6}$ of 72 + 3 =
16. Write in Roman numerals 1776. What happened that year?
17. If a rug 3 feet wide covers 12 square feet, how long is it? How did you get your answer? Prove by drawing.
18. If a rug 5 feet long covers 20 square feet, how wide is it? Prove.
19. The postage on all letters and other written matter is 2 cents for each ounce or fraction of an ounce. How much must I pay for a written book that weighs $7\frac{1}{2}$ oz.? For one that weighs $\frac{3}{4}$ lb.?
20. The postage on newspapers and magazines is 1¢ for 4 ounces. How much would you pay for 1 lb.? $4\frac{1}{2}$ lb.?
21. Examine a sheet of postage stamps. How many stamps in one row? How many rows? How many stamps in $\frac{7}{10}$ of the sheet? In $\frac{4}{5}$ of a sheet? In $\frac{3}{4}$ of a sheet? Continue.
22. How many days in the autumn months? In the spring months? In the summer months? In the winter months?
23. Write in Roman numerals the year in which you were born.
24. How many yards of fencing are needed to inclose a chicken yard 30 feet wide and 36 feet long?

81

1.	2.	3.	4.
$74 \div 9$	$58 \div 7$	$37 \div 4$	$59 \div 6$
$65 \div 7$	$51 \div 6$	$59 \div 7$	$38 \div 7$
$49 \div 6$	$57 \div 9$	$59 \div 9$	$56 \div 9$
$37 \div 5$	$39 \div 7$	$48 \div 5$	$43 \div 8$
$67 \div 9$	$46 \div 6$	$60 \div 8$	$28 \div 6$

82

WHAT I CAN LEARN BY MYSELF

1.

$$\begin{array}{r} 4 \times 5 = \\ 20 \div 4 = \\ 20 \div 5 = \end{array}$$

2.

$$\begin{array}{r} 68 \times 45 = \\ 3060 \div 45 = \\ 3060 \div 68 = \end{array}$$

Check your answers to the following:

- | | | |
|-------------------|-------------------|--------------------|
| 1. 87×68 | 5. 69×78 | 9. 65×76 |
| 2. 98×57 | 6. 67×47 | 10. 85×94 |
| 3. 76×95 | 7. 83×79 | 11. 28×56 |
| 4. 78×89 | 8. 56×47 | 12. 74×96 |

83

WRITTEN PROBLEMS

1. A man bought 24 sheep for \$312. How much was 1 sheep worth?
2. A creamery sold 87 pounds of butter at \$.55 a pound and 46 gal. of ice cream at \$.60 a quart. Make out and receipt the bill to the manager of a hotel.
3. If 15 linen coats cost \$27.75, how much will one cost? How much will a dozen cost?
4. If \$2688 was paid for 42 gas stoves, how much was paid for one?
5. A cattle drover bought 256 cows at \$85 each. How much did he pay for them?
6. Bought 2500 pounds of coal at \$8.00 a ton and 1500 pounds at \$7.20 a ton. Make out and receipt the bill. A ton = 2000 pounds.
7. Albert hired a canoe at 8:30 A.M. and returned it at 11:15 A.M. How much did he pay for it at \$.60 an hour? Full rate was charged for a fraction of an hour.

8. Mr. Black bought 4 pairs of shoes at \$8.75 a pair. How much did he pay for them all?

9. James gets 14 new subscribers for the *Youth's Companion* at \$2.00 each. How much money must he send on? Fill out application for a money order as though you were James. The address is Perry Mason Co., 201 Columbus Ave., Boston, Mass.

Obtain from the post office a quantity of blank applications for money orders and teach pupils how to fill them out. It is suggested that the class go to the post office to obtain definite information about the arrival and departure of mail trains; distribution and weight of mail; carriers' routes and length of time required; number of letters stamped in an hour, etc. From these data, the pupils should make original problems. "Playing Post Office" will not only add interest to the exercise but help to fix valuable information.

84

$$\begin{array}{ll} 1. \frac{5}{8} \text{ of } 30 \div 8 = \\ 2. \frac{4}{5} \text{ of } 45 \div 7 = \\ 3. \frac{6}{7} \text{ of } 42 \div 8 = \\ 4. \frac{3}{4} \text{ of } 28 \div 9 = \\ 5. \frac{2}{3} \text{ of } 27 \div 7 = \end{array}$$

$$\begin{array}{ll} 6. \frac{3}{5} \text{ of } 40 \div 7 = \\ 7. \frac{4}{7} \text{ of } 49 \div 8 = \\ 8. \frac{2}{3} \text{ of } 60 \div 7 = \\ 9. \frac{4}{6} \text{ of } 72 \div 5 = \\ 10. \frac{5}{7} \text{ of } 35 \div 7 = \end{array}$$

85

DICTATION

1. Write in Roman numerals the year after next.
2. A book weighs 16 oz. At 5¢ a lb., how much postage will it require?
3. A candy box 5 inches long, 2 inches wide and 1 inch deep will hold how many caramels one inch each way?
4. How many pints of cider in $\frac{3}{4}$ of a gallon?
5. If 8 chairs cost \$15, how much will 16 chairs cost at the same rate?

86

ORAL PROBLEMS

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. A piece of ground is 75 feet long and 50 feet wide. How many feet of fencing will be required to inclose it?
2. Mrs. Brown divided a dollar and a half equally between Charles and Martha. What part of a dollar did each get?
3. A woman placed 13 eggs under each of 7 hens. All but 8 eggs hatched. How many little chickens had she?
4. A farmer raised 640 bu. of potatoes on 5 acres of land. What was the average yield per acre?
5. Mr. Anderson set out 1200 cabbage plants. One sixth of them died. How much did he get for the rest at \$30 per hundred?
6. In a certain town are 75 street cars. If they average 50 passengers in one trip each, how many people do they carry altogether?
7. 20 books at \$1 each cost \$ ____.
20 books at \$.50 each cost \$ ____.
20 books at \$.25 each cost \$ ____.
8. If a certain number of books at \$2 each cost \$30, how much would the same number cost at 50¢ each? At 25¢ each?
9. If there are 16 apples in 4 quarts, how many apples of like size in a bushel?
10. We leave school at 3:30 P.M. and return at 9 A.M. How many hours are we absent?
11. The floor of a small entry contained 96 tiles with 12 tiles in one row. How many tiles wide was it? If each tile is $\frac{3}{4}$ of a foot each way, how long and how wide is the entry? Drawing.

87

WHAT I CAN LEARN BY MYSELF

Read the following and tell what makes the change in the value. Make a rule if you can.

\$2.50	\$7530.00	\$8.46
\$25.00	\$753.00	\$84.60
\$250.00	\$75.30	\$846.00
\$2500.00	\$7.53	\$8460.00

Continue with other sums until the effect of moving the decimal point is thoroughly understood.

88

- | | |
|--------------------|---------------------|
| 1. $38167 \div 89$ | 6. $67984 \div 28$ |
| 2. $63516 \div 58$ | 7. $53504 \div 39$ |
| 3. $76797 \div 27$ | 8. $69917 \div 98$ |
| 4. $87605 \div 39$ | 9. $97989 \div 79$ |
| 5. $79806 \div 79$ | 10. $76982 \div 27$ |

89

WHAT I CAN LEARN BY MYSELF

Group for "tens" as indicated as you add:

9	4	6	1	4	5	8	2
7	5	7	9	3	8	6	8
3	7	3	1	7	2	4	3
5	3	2	7	9	6	3	9
5	5	8	3	1	4	7	1

90

THE MERRY-GO-ROUND

See Exercise 96, page 109. Draw an ellipse on the board. Write 64, 32, 48, 40, 56, 72, 80, 96, 24, 16, in the circumference and $\frac{7}{8}$ in the center.

91

ORAL PROBLEMS

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. Supply the missing number:

$$\begin{array}{r} 7\frac{3}{4} \\ - 10\frac{3}{4} \\ \hline 6\frac{1}{3} \end{array} \qquad \begin{array}{r} 9 \\ - \\ \hline 5\frac{1}{2} \end{array} \qquad \begin{array}{r} 8\frac{3}{4} \\ - \frac{3}{4} \\ \hline 7\frac{1}{3} \end{array}$$

2. Mr. Jackson cut $4\frac{1}{2}$ tons of hay from one meadow and 6 tons from another. How many tons did he cut in all?

3. From a piece of cloth containing 15 yards, $12\frac{1}{2}$ yards were cut. How many yards remained?

4. A man sold a horse for \$150 thereby gaining \$30. How much had the horse cost?

5. A man sold a horse for \$150 thereby losing \$30. How much had the horse cost?

6. A man bought a horse for \$150 and sold him so as to gain \$30. For how much did he sell the horse?

7. A man bought a horse for \$150 and sold him losing \$30. For how much did he sell the horse?

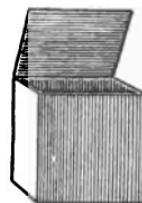
8. How many hours in 3 days?

9. How old are you in years, months, and days?

10. How many square inches of paper will it take to line a cubical box that is 3 inches each way? No lid.

11. A farmer has 26 bags of wheat each containing 2 bushels. How many will he have left after selling 50 bushels?

12. A boy sold his papers for \$.87 and gained \$.19. How much had they cost him?



212 MULTIPLICATION INVOLVING A FRACTION

92

Group for "tens" — add and check:

1.	2.	3.	4.	5.
535	878	689	799	752
565	234	728	888	387
254	956	864	298	823
836	943	676	612	676
227	167	438	679	545
573	564	659	447	564
496	781	847	963	985
875	329	263	558	215
235	645	754	576	792

93

WHAT I CAN LEARN BY MYSELF

Multiply:

Write Think

60

 $\frac{2\frac{1}{2}}{30}$

$$\begin{array}{r} \frac{2\frac{1}{2}}{30} = \frac{1}{2} \times 60 \\ 120 = 2 \times 60 \\ \hline 150 \end{array}$$

- | | | |
|------------------------------|---------------------------|--------------------------|
| 1. $3\frac{1}{2} \times 40;$ | $2\frac{1}{3} \times 60;$ | $3\frac{1}{2} \times 80$ |
| 2. $3\frac{1}{2} \times 30;$ | $3\frac{1}{3} \times 90;$ | $4\frac{1}{3} \times 60$ |
| 3. $2\frac{1}{3} \times 30;$ | $2\frac{1}{2} \times 90;$ | $5\frac{1}{4} \times 20$ |
| 4. $3\frac{1}{4} \times 20;$ | $6\frac{1}{4} \times 80;$ | $7\frac{1}{3} \times 60$ |
| 5. $5\frac{1}{7} \times 70;$ | $4\frac{1}{8} \times 40;$ | $9\frac{1}{2} \times 50$ |

94

Divide all numbers between 72 and 80 by 8 and by 9.

95

WRITTEN PROBLEMS

1. How much was paid for a tract of land containing 956 acres at \$75 an acre?
2. If a bushel of corn weighs 56 pounds, how many bushels in a load that weighs 3640 pounds?
3. If 9 shingles cover one square foot, how many shingles will be required for a shed roof 18 feet wide and 40 feet long? Drawing.
4. How many yards of matting 36 inches wide will be necessary for a floor 12 feet wide and 15 feet long?
5. How much will $20\frac{1}{2}$ dozen lemons cost at \$.16 a dozen?
6. From a piece of goods $25\frac{3}{4}$ yards long, a dress pattern of $9\frac{1}{2}$ yards was cut. How many yards remained in the piece?
7. Add: Forty thousand four; four thousand forty; forty-four thousand.
8. The divisor is 54; the quotient is 76. What is the dividend? Continue.
9. The product is 5382; the multiplier is 69. What is the multiplicand? Continue.
10. Multiply first by 10 and then by 100: \$8.50; \$45.67; \$6.09; \$.56. How did you do it?
11. Make a drawing of the front blackboard in your school room. Make an inch represent a yard. This is "drawing to a scale."
12. Find the "scale" on a map of the United States and find how far New York is from Chicago and from San Francisco.

Continue until the class understands the principle as an introduction to the lesson on the Parcel Post, page 217.

96

WHAT I CAN LEARN BY MYSELF

$$(a) \begin{array}{r} 45 \\ 36) \overline{1620} \\ 144 \\ \hline 180 \\ 180 \\ \hline \end{array} \qquad \begin{array}{r} \text{Check} \\ 36 \\ 45) \overline{1620} \\ 135 \\ \hline 270 \\ 270 \\ \hline \end{array}$$

$$(b) \begin{array}{r} 45 - 15 \\ 36) \overline{1635} \\ 144 \\ \hline 195 \\ 180 \\ \hline 15 \\ \end{array} \qquad \begin{array}{r} \text{Check} \\ 36 - 15 \\ 45) \overline{1635} \\ 135 \\ \hline 285 \\ 270 \\ \hline 15 \\ \end{array}$$

In what two ways can you now check division?

97

Multiply:

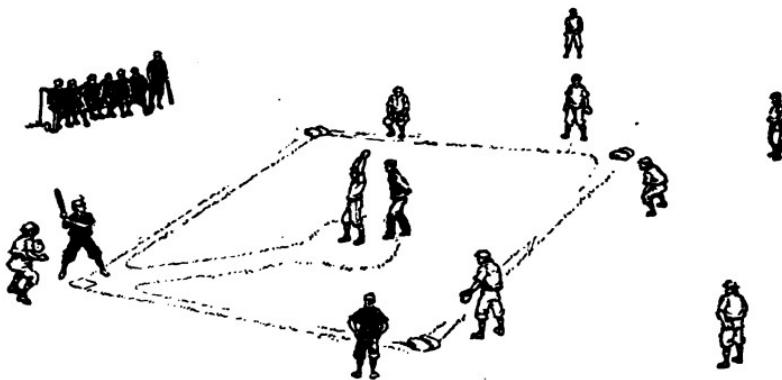
1.	2.	3.	4.	5.
760	987	565	840	675
<u>56$\frac{1}{4}$</u>	<u>87$\frac{1}{3}$</u>	<u>98$\frac{1}{5}$</u>	<u>96$\frac{1}{6}$</u>	<u>40$\frac{1}{5}$</u>

98

- | | |
|-----------------------------------|------------------------------------|
| 1. $\frac{4}{5}$ of $60 \div 9 =$ | 6. $\frac{5}{8}$ of $64 \div 7 =$ |
| 2. $\frac{2}{3}$ of $75 \div 8 =$ | 7. $\frac{5}{6}$ of $54 \div 8 =$ |
| 3. $\frac{5}{6}$ of $72 \div 7 =$ | 8. $\frac{7}{8}$ of $56 \div 6 =$ |
| 4. $\frac{3}{8}$ of $72 \div 8 =$ | 9. $\frac{5}{7}$ of $63 \div 7 =$ |
| 5. $\frac{6}{7}$ of $49 \div 9 =$ | 10. $\frac{3}{5}$ of $50 \div 9 =$ |

99

BASEBALL



Explain the game to us. If there are 9 men in one team, how many men are in 2 teams? What is a League? If a League includes 8 teams, how many men are there in all the teams? One League in the United States has 12 teams in it. How many men in 12 baseball teams?

$$\begin{array}{r}
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 9 & 9 & 9 & 9 \\
 81 & \underline{9} & 9 & 9 \\
 & \underline{?} & \underline{9} & 9 \\
 & \underline{?} & \underline{9} & 9 \\
 & \underline{108} & &
 \end{array}$$

Make the Table of Nines and learn it.

100**THE MERRY-GO-ROUND**

See Exercise 96, page 109. Draw an ellipse on the board. Write 81, 27, 63, 36, 72, 18, 54 and 45 in the circumference and $\frac{7}{3}$ in the center.

101**DICTION**

1. Write in words 940,049.
2. How many quarts in $\frac{1}{2}$ bushel?
3. A farmer had 28 pigs. He sold $\frac{2}{7}$ of them at \$9.00 each. How much did he get for them?
4. How much shall I pay for a steak weighing $1\frac{3}{4}$ pounds at \$.60 a pound?
5. An orchard containing 300 trees produced on an average 3 bu. to the tree. How much did the apples bring at \$3.00 a bushel?

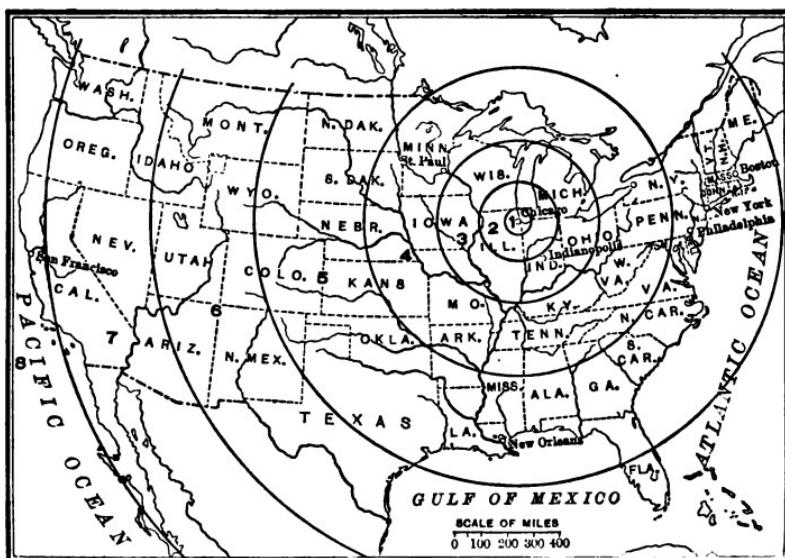
102

Add and check:

1.	2.	3.	4.	5.
977	482	985	986	696
463	558	896	224	718
645	355	487	866	493
366	749	749	557	877
534	881	961	753	975
579	615	359	387	435
778	393	768	658	636
292	897	442	127	549
817	547	777	988	361
<u>966</u>	<u>129</u>	<u>896</u>	<u>579</u>	<u>725</u>

103

THE PARCEL POST MAP



Obtain from the post office a pamphlet entitled "Parcel Post Regulations" and the local Parcel Post map.

1. How far do you live from New York? From Chicago? From San Francisco? See scale of miles.
2. Suppose you lived in Chicago and wished to send a package weighing $5\frac{1}{2}$ pounds to Boston. How much postage would you pay?
3. Why did the government lay off the territory in great circles instead of in great squares? If possible, get this answer by yourself by drawing several squares of different sizes with the same center. Now travel to the east side of the first square. Next travel to the northeast corner. What do you find? Travel east in the circles; northeast. What do you find?

104

1.	2.	3.	4.
$81 \div 9$	$76 \div 8$	$85 \div 9$	$65 \div 9$
$65 \div 7$	$75 \div 9$	$76 \div 6$	$54 \div 8$
$83 \div 9$	$53 \div 8$	$58 \div 7$	$47 \div 7$
$51 \div 6$	$59 \div 9$	$78 \div 9$	$36 \div 5$
$71 \div 6$	$39 \div 9$	$93 \div 8$	$69 \div 7$
$57 \div 7$	$68 \div 8$	$74 \div 6$	$46 \div 6$

105

PLAYING PARCEL POST

Adapt to fit locality

Postal Clerk (taking package): What is in the package?

Mr. Sandison: Merchandise. No writing.

Postal Clerk (weighing package): Two pounds seven ounces. You must pay for three pounds.

Mr. Sandison: How much postage does the package require?

Postal Clerk (looking at the address and consulting a map): Indianapolis is in the second zone from Chicago. The package will take — cents.

Mr. Sandison (to stamp clerk): I wish to buy — cents' worth of stamps. (Gives clerk \$.25 from whom he receives stamps and change).

(Goes to mailing clerk): Will you please mail this package for me?

Mailing Clerk (looking at the address): I cannot take it until you have placed your name and address and the word "From" in the upper left-hand corner.

Mr. Sandison: Thank you, I forgot that. (Goes to nearby stand and adds his name as required.)

Continue.

106

- | | | |
|---------------------|----------------------|----------------------|
| 1. $17,097 \div 42$ | 6. $14,892 \div 31$ | 11. $10,422 \div 25$ |
| 2. $57,650 \div 23$ | 7. $27,328 \div 45$ | 12. $22,580 \div 82$ |
| 3. $49,948 \div 82$ | 8. $58,297 \div 62$ | 13. $11,809 \div 32$ |
| 4. $19,385 \div 34$ | 9. $37,234 \div 46$ | 14. $57,975 \div 27$ |
| 5. $15,930 \div 52$ | 10. $40,298 \div 53$ | 15. $42,200 \div 73$ |

107**WRITTEN PROBLEMS**

1. Mr. Phillips paid \$216 house rent per year. How much was that per month?
2. What is the cost of 986 head of sheep at \$16 per head?
3. One freight train carried 76 cars. This was 29 more cars than a second freight carried. How many cars in both trains?
4. A man traveled 780 miles in 26 hours. What was the average distance that he traveled per hour?
5. A farmer raised 268 bushels of wheat. This was $\frac{1}{3}$ of the quantity of corn that he raised. How many bushels of corn did he raise?
6. A teamster hauled 1300 railroad ties in 26 loads of equal size. How many ties were in each load?
7. A barrel of salt weighs 280 pounds. What will a wagon loaded with 8 barrels of salt weigh, if the wagon weighs 1834 pounds?
8. A farmer's income for a certain year was \$1750. His expenses were \$1196. What was the balance?
9. At the close of July, how many more days are left of the year?

10. Corn weighs 56 lb. to the bushel. A farmer's corn crop weighed 9278 lb. How many bushels had he?
11. A dealer shipped 648 dozen eggs in 18 crates of equal size. How many dozen were there in each crate?
12. At the beginning of a trip a trolley car register showed 517 fares had been collected and at the end of the trip 592 fares. How many were collected during the trip?
13. A mail carrier who drives 25 miles per day drives 975 miles in what time?
14. Find the weight of 15 bales of cotton, each bale weighing 500 lb.
15. How many feet are there in 3456 inches?
16. When a field of 36 acres yields 756 bushels of wheat, how much is the yield to the acre?
17. How many minutes in one day of 24 hours?
18. A baker charged 38 cents for 3 loaves of bread. At that rate what should he charge for 12 loaves?
19. Mr. Sanders bought a lot for \$1500 and built on it a house that cost \$3800. He sold the property for \$5800. How much was his profit?
20. Mr. Tipton owned 1560 acres of land. He sold 480 acres to one man and 560 acres to another. How many acres had he left?
21. There are 5280 feet in one mile. How many yards are there?

TEST PAGE I

This page and the one following contain types of exercises which the class should do readily before proceeding to more difficult work. A class percentage of not less than eighty should be required.

These pages can also be used in September for classes about to take up the Intermediate Arithmetic, as a means of revealing weaknesses that have developed during the summer vacation.

I

Write answers only:

1. Write: in figures, forty thousand forty; in Roman numerals, 96.
2. Write in words: 90,049.
3. Bob planted 72 tulips in 9 equal rows. How many tulips in each row?
4. How much will 6 hats cost, if 3 hats cost \$25?
5. A farmer who had 45 sheep sold all but 9. How many did he sell?

II

Show all work — time limit 25 minutes:

1. A gardener raised 2156 bushels of cranberries on 38 acres of ground. How many bushels did he average to the acre?
2. Another gardener had 27 acres planted in cabbage. This is $\frac{1}{3}$ of his whole farm. How many acres in the farm?
3. How many square feet of linoleum will I need for a kitchen 15 feet long and 12 feet wide?
4. How many yards of fencing will I need to inclose a lot 36 feet wide and 72 feet long?
5. I exchanged 3 pounds of butter at \$.60 and 5 dozen eggs at \$.40 for sugar at \$.15 a pound. How many pounds did I receive?

TEST PAGE II**III****ORAL PROBLEMS**

Before solving tell the sign (or signs) of the operation to be used in the problem.

1. One sixth of a yard of velvet costs \$.90. How much does a yard cost?
2. How many square feet of frozen surface are there on a pond having an average length of 50 feet and an average width of 40 feet?
3. A farmer received 200 pounds of wool from 25 sheep. How many pounds did each sheep average?
4. How much will a half-dozen cans of tomatoes cost at the rate of 2 cans for a quarter?
5. For our kitchen we need 14 towels of $1\frac{1}{2}$ yards each. How many yards must we buy for all?

IV

Write at dictation:

1. Add: 987; 643; 578; 544; 996; 519; 977.
(two minutes)
2. Find the difference between 7969 and 9668. (one minute)
3. Multiply 806 by 970. (three minutes)
4. Divide 60,300 by 85. (three minutes)

V

Each child one problem:

1. $\frac{1}{5}$ of $35 \times 7 =$
2. $\frac{2}{7}$ of $63 \div 5 =$
3. $\frac{4}{9}$ of $72 \div 6 =$
4. $\frac{5}{7}$ of $42 \times 6 =$
5. $\frac{3}{5}$ of $40 \div 7 =$
6. $\frac{5}{6}$ of $72 \div 9 =$
7. $\frac{3}{8}$ of $56 \div 9 =$
8. $\frac{2}{3}$ of $36 \times 10 =$
9. $\frac{3}{7}$ of $21 \times 6 =$

TABLES
MULTIPLICATION TABLES

$2 \times 1 = 2$	$3 \times 1 = 3$	$4 \times 1 = 4$	$5 \times 1 = 5$
$2 \times 2 = 4$	$3 \times 2 = 6$	$4 \times 2 = 8$	$5 \times 2 = 10$
$2 \times 3 = 6$	$3 \times 3 = 9$	$4 \times 3 = 12$	$5 \times 3 = 15$
$2 \times 4 = 8$	$3 \times 4 = 12$	$4 \times 4 = 16$	$5 \times 4 = 20$
$2 \times 5 = 10$	$3 \times 5 = 15$	$4 \times 5 = 20$	$5 \times 5 = 25$
$2 \times 6 = 12$	$3 \times 6 = 18$	$4 \times 6 = 24$	$5 \times 6 = 30$
$2 \times 7 = 14$	$3 \times 7 = 21$	$4 \times 7 = 28$	$5 \times 7 = 35$
$2 \times 8 = 16$	$3 \times 8 = 24$	$4 \times 8 = 32$	$5 \times 8 = 40$
$2 \times 9 = 18$	$3 \times 9 = 27$	$4 \times 9 = 36$	$5 \times 9 = 45$
$2 \times 10 = 20$	$3 \times 10 = 30$	$4 \times 10 = 40$	$5 \times 10 = 50$
$2 \times 11 = 22$	$3 \times 11 = 33$	$4 \times 11 = 44$	$5 \times 11 = 55$
$2 \times 12 = 24$	$3 \times 12 = 36$	$4 \times 12 = 48$	$5 \times 12 = 60$

$6 \times 1 = 6$	$7 \times 1 = 7$	$8 \times 1 = 8$	$9 \times 1 = 9$
$6 \times 2 = 12$	$7 \times 2 = 14$	$8 \times 2 = 16$	$9 \times 2 = 18$
$6 \times 3 = 18$	$7 \times 3 = 21$	$8 \times 3 = 24$	$9 \times 3 = 27$
$6 \times 4 = 24$	$7 \times 4 = 28$	$8 \times 4 = 32$	$9 \times 4 = 36$
$6 \times 5 = 30$	$7 \times 5 = 35$	$8 \times 5 = 40$	$9 \times 5 = 45$
$6 \times 6 = 36$	$7 \times 6 = 42$	$8 \times 6 = 48$	$9 \times 6 = 54$
$6 \times 7 = 42$	$7 \times 7 = 49$	$8 \times 7 = 56$	$9 \times 7 = 63$
$6 \times 8 = 48$	$7 \times 8 = 56$	$8 \times 8 = 64$	$9 \times 8 = 72$
$6 \times 9 = 54$	$7 \times 9 = 63$	$8 \times 9 = 72$	$9 \times 9 = 81$
$6 \times 10 = 60$	$7 \times 10 = 70$	$8 \times 10 = 80$	$9 \times 10 = 90$
$6 \times 11 = 66$	$7 \times 11 = 77$	$8 \times 11 = 88$	$9 \times 11 = 99$
$6 \times 12 = 72$	$7 \times 12 = 84$	$8 \times 12 = 96$	$9 \times 12 = 108$

$10 \times 1 = 10$	$11 \times 1 = 11$	$12 \times 1 = 12$	
$10 \times 2 = 20$	$11 \times 2 = 22$	$12 \times 2 = 24$	ROMAN
$10 \times 3 = 30$	$11 \times 3 = 33$	$12 \times 3 = 36$	NUMERALS
$10 \times 4 = 40$	$11 \times 4 = 44$	$12 \times 4 = 48$	
$10 \times 5 = 50$	$11 \times 5 = 55$	$12 \times 5 = 60$	I = 1
$10 \times 6 = 60$	$11 \times 6 = 66$	$12 \times 6 = 72$	V = 5
$10 \times 7 = 70$	$11 \times 7 = 77$	$12 \times 7 = 84$	X = 10
$10 \times 8 = 80$	$11 \times 8 = 88$	$12 \times 8 = 96$	L = 50
$10 \times 9 = 90$	$11 \times 9 = 99$	$12 \times 9 = 108$	C = 100
$10 \times 10 = 100$	$11 \times 10 = 110$	$12 \times 10 = 120$	D = 500
$10 \times 11 = 110$	$11 \times 11 = 121$	$12 \times 11 = 132$	M = 1000
$10 \times 12 = 120$	$11 \times 12 = 132$	$12 \times 12 = 144$	

TABLES OF WEIGHTS AND MEASURES

LIQUID MEASURE

2 pints = 1 quart (qt.)
 4 quarts = 1 gallon (gal.)

DRY MEASURE

2 pints (pt.) = 1 quart (qt.)
 8 quarts = 1 peck (pk.)
 4 pecks = 1 bushel (bu.)

AVOIRDUPOIS WEIGHT

16 ounces (oz.) = 1 pound (lb.)
 2000 pounds = 1 ton (T.)

LINEAR MEASURE

12 inches (in.) = 1 foot (ft.)
 3 feet = 1 yard (yd.)
 5280 feet = 1 mile (mi.)

SQUARE MEASURE

144 square in.	}	= 1 square foot
(sq. in.)		(sq. ft.)
9 square feet	=	1 square yard
		(sq. yd.)

TIME MEASURE

60 seconds (sec.)	= 1 minute (min.)
60 minutes	= 1 hour (hr.)
24 hours	= 1 day (da.)
7 days	= 1 week (wk.)
52 weeks	= 1 year
365 days	= 1 common year (c. yr.)
366 days	= 1 leap year (l. yr.)
100 years	= 1 century (C.)

SUGGESTIONS TO TEACHERS

1. Read the Preface and Table of Contents. There you will find the principles underlying the method of the book and a synopsis of the plan.
2. Make haste slowly. See that each day's lesson averages about 80 per cent for class work. Note weaknesses, explain and follow with similar work the next day.
3. Introduce new ideas inductively and through situations that are vitally interesting to the child. This can best be done by a generous use of dramatization. In dramatization throw the burden of suggestion upon the pupils. The ingenuity fostered when children transform schoolroom furniture or construct, at home, playthings for school use, is of inestimable value to them. Moreover, the lesson thought out by twenty-five little minds is far richer in suggestive material than one which only the teacher plans. Insist on play for the sake of number — not for mere amusement. Require the utmost courtesy at all times.
4. Follow concrete introduction with objective illustration. In beginning classes use sticks, seeds, shoe pegs, etc. Make all classes familiar with representation through group counters (see Exercise 2, page 2).
5. Follow the concrete and objective presentation with systematic flash practice with the number symbols. Use large perception cards for this purpose. Keep up this practice for short periods daily until the reaction is automatic. *Then stop*, and go on to more difficult exercises. Do not go to the miscellaneous practice until the child knows his number tables in order, forward and backward. No concert work.
6. Lastly, apply the idea to new concrete situations. The application should be left to the child to work out unaided,

as a test of what he has acquired under the teacher's direction. Insist on the strictest honesty in the preparation of papers. Class spirit will do more to check cheating than any device.

7. Encourage free, graphic illustration of concrete problems, particularly in the lower grades.

8. Teach the child to estimate answers before beginning to figure, and to use his common sense on all occasions. What was the difficulty in the case of the pupil who gave 238 years as the answer to the following: "My uncle is 7 years older than my aunt, who is 34 years old. How old is my uncle?" Give frequent exercises in which the pupils do nothing but estimate answers in round numbers, or in which they merely indicate the process by which the answer is to be obtained.

9. Put a premium on the original solution of a problem. Commend highly the child who has ingenuity enough to see two or more correct methods.

10. Periodically call for original problems from the class. When presented, have the pupils criticize them for interest, for probability, for test of thinking power, etc. Use the best problems. Two fertile fields for original problems are (a) life on the street and in the home; (b) the geography, history or stories that the class is reading. Care should be taken not to violate good taste in reducing poetical symbolism to mathematics.

11. Endeavor so to stimulate the class that each pupil will strive to work out for himself the exercises entitled, "What I Can Learn by Myself." These have been so carefully graded that the pupil with average ability will have no difficulty.

12. Give quantities of flash work in which the teacher writes on the board a problem such as $\frac{67}{34}$ for the class to solve without pencil. The pupils should learn that the

result may be arrived at in different ways and that while they wait for the slower members to get the answer, they have time to check.

13. Require pupils to check answers until they have acquired the habit.

14. Make accuracy the first requisite and speed the second. Encourage speed.

15. Encourage each pupil to keep a record of his individual progress.

16. Teach pupils to help one another without telling the answer. Pupil teaching is in many ways the most vital of all.

17. Follow the order of the text-book and supplement it by exercises fitted to the needs of individual classes, no two of which are ever exactly alike.

18. Make success the keynote of the work.

HOW ONE RECITATION MIGHT BE CONDUCTED

Grade: Beginning Fourth. Time, 25 minutes.

Part I — 5 minutes

From the book and without pencil, Exercises 39, page 130, and 48, page 135.

Or: On paper at teacher's dictation, adaptations of Exercise 47, page 135; or Exercises 49, page 136, and 55, page 140. Correct in class.

Part II — 10 minutes

Study of arithmetic papers prepared alone by the pupils on the previous day. These papers have been graded by the teacher, who has made note of individual failures. The pupils now see their papers for the first time.

Lesson assigned was Exercise 52, page 138, problems 18, 19, 20; Exercise 45, page 133, example 3; Exercise 53, page 139, examples 1, 2.

The teacher announces that the class made 80 per cent on the papers, just the standard she is trying to maintain. This means not only that the pupils have worked earnestly, but that she has gauged their power accurately.

Those pupils who failed on the first problem are asked to rise for help. The failures are of two types: (1) those not knowing the number of days in March and April, who are immediately taught the familiar rime, and (2) those who are inaccurate and are now shown their mistakes. The latter are urged not only for their own good but for the credit of the class to be more careful in the future.

Those who failed on the second problem did not see the ratio between 4 and 12. They are asked to solve orally from the book Exercise 34, page 128, which bears directly on the subject and which they have failed to grasp at a previous lesson.

Those that failed on the third problem were careless in copying the column straight and in computation. See admonition under (2) in the treatment of the first problem.

Those who failed on the abstract examples are sent to the board and given new exercises until the teacher is satisfied that they understand. The rest of the class, at their seats, figure with them for practice.

Part III — 10 minutes

Exercise 58, page 141, "Sama, the Little Boy in Japan": On the previous day the teacher has told the boys of the class that they may come prepared to play the lesson. At recess or after school the boys have talked it over and have come ready with paper fish, stilts, toy soldiers (cut from paper, or merely wooden toothpicks), several kites,

and some skyrockets. The girls of the class sit with closed books and give the answer after each problem. The teacher or a pupil writes upon the board:

$$\begin{array}{r} 9 \text{ fish} \\ + 6 \text{ fish} \\ \hline 15 \text{ fish} \end{array} \qquad \begin{array}{r} 15 \text{ boys} \\ - 8 \text{ boys} \\ \hline 7 \text{ boys} \end{array} \qquad \begin{array}{r} 150 \text{ soldiers} \\ - 70 \text{ soldiers} \\ \hline 80 \text{ soldiers} \end{array} \qquad \text{etc.}$$

The written lesson assigned for the next day is Exercise 59, page 142, together with the first three problems under Exercise 63, page 143. Time, 25 minutes.

ALEXANDER'S NEW SPELLING BOOK

BY GEORGIA ALEXANDER

District Superintendent of Public Schools, Indianapolis

The former edition, which was used with unvarying success, has been entirely rebuilt to meet the most modern and approved ideas of vocabulary and methods of teaching. It is now published as follows:

GRADES 3, 4

GRADES 5, 6

GRADES 3, 4, and 5

GRADES 7, 8, and Advanced

GRADES 6, 7, and 8

GRADES 3-8

This speller teaches spelling *through interest*. There is constant variety in the presentation of new words and in drill, and to further insure interest, the lessons have been purposely made short and the words and lessons very carefully graded. The deadening effect of approaching the spelling lesson each day in the same way is avoided by sometimes introducing the words to be learned in connection with the quotations from standard authors and model letters from celebrated men and women; sometimes in connection with elliptical exercises from classic fables and proverbs and not infrequently through the study of a picture.

VOCABULARY AND ARRANGEMENT

The common words of everyday usage alone are taught. These are purposely distributed so that each word invites to fresh attack and is therefore remembered as an individual. They are not arranged in the *sin, win, gin, ace, mace, lace* fashion. Homonyms are brought together in review lists, or after they have been learned separately. Column words are so arranged that the words brought together present an associated meaning or relation which readily lends itself to the formation of easy original sentences.

Daily incentive is also given the child to increase his own vocabulary by exercises in the use of the dictionary, word study, word building, word analysis, and etymology.

CONTENT BEFORE FORM

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